July, 1952

GRAPH & INDUSTR

EDISON ELECTRIC INSTITUTE BULLETIN

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JUL 7 1952

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PUBLISHED MONTHLY BY EDISON ELECTRIC INSTITUTE

ELECTRICAL RESEARCH STATISTICS
THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

March, 1951-1952

SOURCE AND DISPOSAL OF ENERGY—MONTH OF MARCH

	1952	1951	%
GENERATION* (Net)			
By Fuel Burning Plants	22,597,012,000	21,698,855,000	+ 4.1
By Water Power Plants	10,442,691,000	9,221,217,000	+13.2
Total Generation	**33,039,703,000**	**30,920,072,000**	**+ 6.9**
Add—Net Imports Over International Boundaries	180,809,000	165,235,000	+ 9.4
Less—Company Use	121,355,000	128,625,000	− 5.7
Less—Energy Used by Producer	705,806,000	566,380,000	+24.6
Net Energy for Distribution	**32,393,351,000**	**30,390,302,000**	**+ 6.6**
Lost and Unaccounted for	3,940,748,000	4,241,062,000	− 7.1
Sales to Ultimate Customers	**28,452,603,000**	**26,149,240,000**	**+ 8.8**

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS—As of March 31			
Residential or Domestic	39,546,224	37,882,238	+ 4.4
Rural (Distinct Rural Rates)	1,647,671	1,602,468	+ 2.8
Commercial or Industrial:			
Small Light and Power	5,537,741	5,439,695	+ 1.8
Large Light and Power	246,530	247,047	− 0.2
Other Customers	163,395	157,763	+ 3.6
Total Ultimate Customers	**47,141,561**	**45,329,211**	**+ 4.0**
KILOWATTHOUR SALES—During Month of March			
Residential or Domestic	7,547,917,000	6,632,883,000	+13.8
Rural (Distinct Rural Rates)	543,866,000	544,853,000	− 0.2
Commercial or Industrial:			
Small Light and Power	4,945,341,000	4,568,362,000	+ 8.3
Large Light and Power	13,868,814,000	12,873,211,000	+ 7.7
Street and Highway Lighting	298,055,000	277,875,000	+ 7.3
Other Public Authorities	709,676,000	655,482,000	+ 8.3
Railways and Railroads:			
Street and Interurban Railways	293,985,000	319,570,000	− 8.0
Electrified Steam Railroads	209,554,000	227,208,000	− 7.8
Interdepartmental	35,395,000	49,796,000	−28.9
Total to Ultimate Customers	**28,452,603,000**	**26,149,240,000**	**+ 8.8**
Revenue from Ultimate Customers	**$504,333,900**	**$462,576,500**	**+ 9.0**

RESIDENTIAL OR DOMESTIC SERVICE

AVERAGE CUSTOMER DATA—For 12 months ended March 31			
Kilowatthours per Customer	2,053	1,882	+ 9.1
Average Annual Bill	$57.32	$53.83	+ 6.5
Revenue per Kilowatthour	2.79¢	2.86¢	− 2.5

* By Courtesy of the Federal Power Commission.

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EDISON ELECTRIC INSTITUTE BULLETIN

Volume 20 JULY, 1952 No. 7

Twentieth Annual Convention Sets Sights for Further Industry Progress

Cleveland Meeting Inaugurates Third Decade of Institute Activity

THROUGHOUT the general sessions of the Twentieth Annual EEI Convention, Cleveland, June 2-4, the over-all theme, whether expressed or implied, was one of confidence in the ability of the industry to meet the foreseeable power demands of the future, to withstand threats of socialization, and to continue its remarkable development as a basic contributor to the nation's economic advancement. It was also evident at the meeting that national and international developments, as well as election-year considerations, have intensified the industry's alertness to the significance of a wide variety of trends and events, and that further impetus has been given to cooperative efforts seeking solution to common problems.

Though it may have given pause for reflection upon the past two decades of Institute activity, the meeting was dedicated to the search for new vistas of achievement and dealt with past accomplishments only insofar as they were keystones to future development. Retiring EEI President George M. Gadsby observed, however, that as the Institute "approaches maturity and voting age, I feel we can all look back upon its record of accomplishment with satisfaction."

The general sessions, which presented nationally prominent speakers representing business, industry, education, and agriculture, were the scene of vigorous and forthright pronouncements sparking the industry's determination to help preserve the American way of life. This was pointed up in the opening convention address when Mr. Gadsby asserted that "In conducting the fight we have against the encroachment of the Federal government in a proprietary capacity in the manufacture and sale of electricity, we have been fighting for the freedom of all industry."

Including searching analyses of government plans for power development and methods of combating Federal encroachment, the sessions also provided insight into problems of management, personnel procurement, engineering advances, and water resources. (Convention addresses appear in this issue of the BULLETIN.)

The Setting

Meeting in Cleveland for the first time, the convention was set against a background of diversified industrialization, a plexus of factories lining the winding Cuyahoga River and Lake Erie, with ore ships plying the waterways leading to the city. The convention activities, which, for the most part, were centered around Terminal Tower, the city's distinctive landmark, and the massive Public Auditorium, with its tree-lined Mall running lakeward, were heightened by the courtesy and friendliness of the people of Cleveland. This was emphasized by the warm welcome accorded delegates by The Hon. Frank J. Lausche, Governor of Ohio, and The Hon. Thomas A. Burke, Mayor of Cleveland, at the opening convention session.

Bayard L. England, President of the Atlantic City Electric Co., was elected President of the Institute at the convention, succeeding Mr. Gadsby, President of the Utah Power & Light Co. Upon being presented to delegates as the new Institute head on Wednesday morning, Mr. England led the group in a vote of thanks to Mr. Gadsby for his untiring efforts on behalf of EEI and the industry during the past 12 months.

Elected Vice President of the Institute at the annual meeting was Walter H. Sammis, President of The Ohio Edison Co. Harold S. Sutton, Treasurer of the Consolidated Edison Co. of New York, Inc., who has served as Treasurer of the Institute for the past year, was reelected to that post, and 18 member company executives were named to the EEI Board of Directors.

In the Arena of the Public Auditorium, on Tuesday night, the industry's highest award, the Charles A. Coffin Award, was presented to the Pacific Gas and Electric Co. Philip D. Reed, Chair-

OFFICERS OF EEI
1951-1952

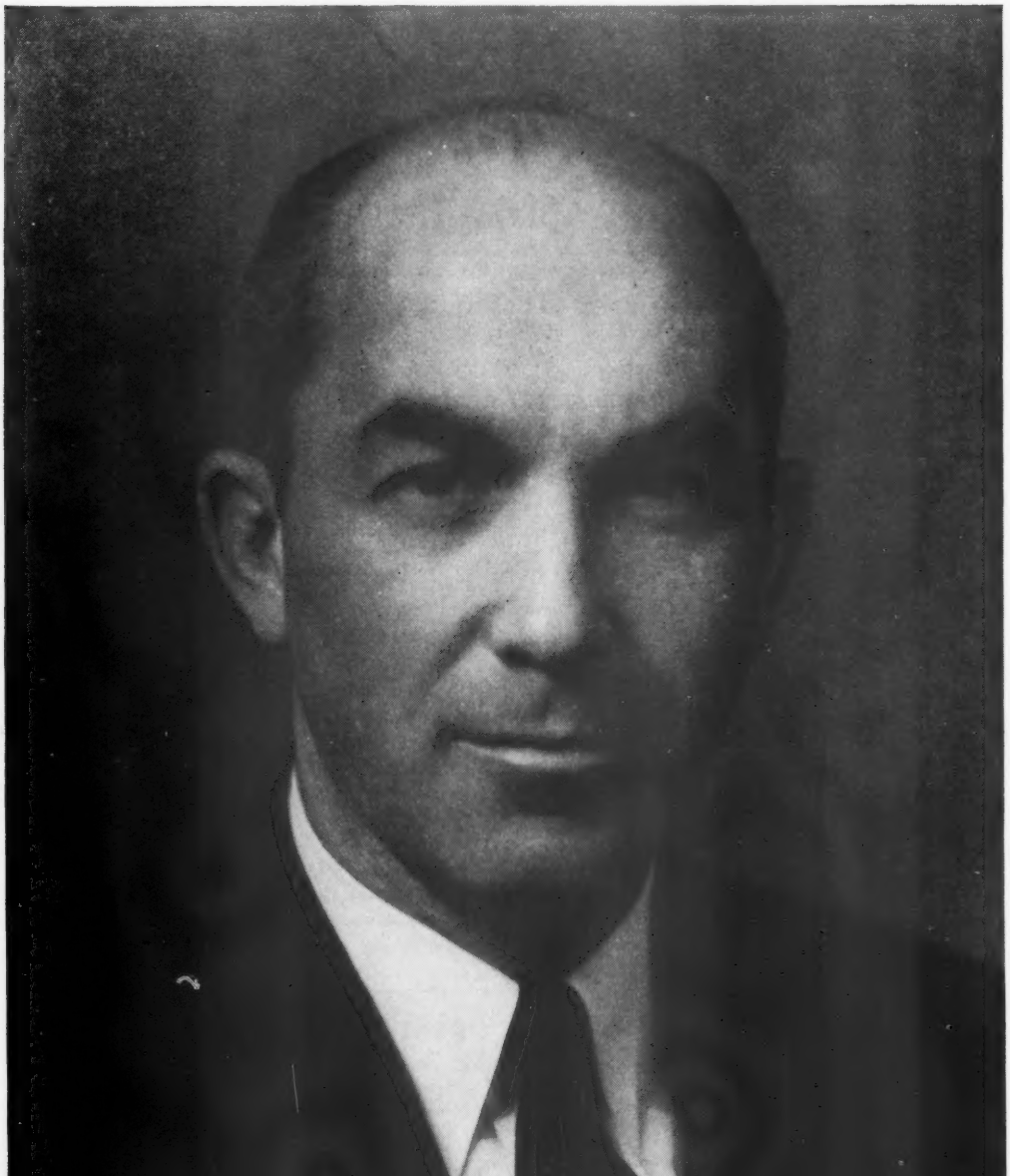
B. L. ENGLAND, *President*
Atlantic City Electric Company
Atlantic City, New Jersey

W. H. SAMMIS, *Vice President*
The Ohio Edison Company
Akron, Ohio

H. S. BENNION, *Vice President and Managing Director*
420 Lexington Avenue
New York 17, New York

H. S. SUTTON, *Treasurer*
Consolidated Edison Company of New York, Inc.
New York, New York

A. B. MORGAN, *Secretary and Assistant Managing Director*
420 Lexington Avenue
New York 17, New York



BAYARD L. ENGLAND

Newly Elected President of the Edison Electric Institute

man of the Board of the General Electric Co., made the presentation to James B. Black, PG&E President, in a ceremony which is described in full on page 222 of this issue of the BULLETIN.

Dramatic Presentation

Attended by more than 1800 delegates and guests, the convention also held its four general sessions in the Public Auditorium, and one of the most unusual features at these sessions was a playlet, which, in a dramatic manner, demonstrated the value of the Oesterreich Pole Top Method of Resuscitation.

Presented on Monday morning and introduced by Lou Uptegrove of The Cleveland Electric Illuminating Co.'s overhead lines department, the performance starred crewmen of the Illuminating Co. in roles with which they were not unfamiliar, for they played themselves. When the curtain rose, the audience heard Foreman Gus Prugh conducting a conference on safe work procedures with his crew, in a life-like stage setting consisting of an actual pole and a line truck. The crew then proceeded with an assigned job, and action came swiftly as a careless lineman made a simulated high-voltage contact with an overhead conductor.

The pole top rescue following the flash-over, which echoed through the auditorium, vividly portrayed the effectiveness of the resuscitation techniques in which electric company personnel are trained. The tragedy caused by carelessness was also well portrayed through the grief of a young crew member who, in the play, was a witness to a near fatality during his first day on the job.

All of the participants, including Linemen Fred Greiner, Whitey Piorkowski, John Tesmer, Joe Vostrak, Driver Art Richter, and Groundmen Marty Brickner, John Pikus, and Jack Sommers, are to be congratulated, as is J. P. Flemming, Illuminating Co. Supervisor of Training and Safety, to whom a great share of the credit for the presentation must go.

Prize Awards

On Wednesday morning, George E. Whitwell, Chairman of the EEI Prize Awards Committee and Vice President of the Philadelphia Electric Co., conducted the presentation of the Reddy Kilowatt Annual Report Award and the Claude L. Matthews Valor Award. Before the presentation ceremony, however, Mr. Whitwell briefly reviewed the competitions for which prizes were awarded at the EEI Sales Conference earlier this year and reported that in the six commercial contests, there was generally a larger number of entries than in any previous year.

"To all of those who have competed for the awards sponsored by EEI," Mr. Whitwell said, "we extend our appreciation. They have helped us through their entries and, whether winners or not, have gained greatly for themselves and their companies through their efforts."

"To an even greater extent, perhaps," he continued, "we are indebted to the donors. To them accrues a far extending value, not only in the over-all recognition and promotion of their products and services but in the approbation with which they are regarded both by customers and competitors."

Announcing a newcomer to the prize awards contests sponsored through the Institute, Mr. Whitwell stated that "Next year the General Electric Co. will offer the 'More Power to America Award,' open for competition among industrial power salesmen and sales engineers. Except for lighting, there have previously been no contests for this important segment of the over-all sales activities of electric utilities."

Following a playlet, which, in a lighter vein, depicted the valuable objectives of the prize awards program, presentation was made of the Reddy Kilowatt

NEW PRESIDENT OF THE INSTITUTE

BAYARD L. ENGLAND, President of the Atlantic City Electric Co., was elected President of the Edison Electric Institute by the EEI Board of Directors on June 3 at the Institute's Twentieth Annual Convention, succeeding George M. Gadsby, President of the Utah Power & Light Co. Mr. England has been Vice President of the Institute for the past 12 months.

Rounding out three decades in the electric industry, Mr. England has made his career at Atlantic City Electric Co. and is recognized as a leading figure among the nation's electric company chief executives. Born in Newark, N. J., on November 2, 1903, he is one of the youngest men ever to hold the presidency of the Institute.

After graduation from Temple University, Mr. England joined Atlantic City Electric as a clerk in 1922, rising to distribution engineer two years later. In 1929, he became a division manager, a position he held until 1935, when he was appointed commercial manager. Six years later, in 1941, he was named vice president and assistant general manager, becoming general manager and a director in 1946. Since 1948, he has been president and general manager.

During his 30 years of service, Mr. England's company has grown from modest size, serving principally Atlantic City and nearby resort areas, to an organization of more than 1500 employees, with a service area spanning the eight southern counties in New Jersey. He has been largely instrumental in Atlantic City Electric's diversification of operation, so that today, in addition to resort service, the company also furnishes electric energy to the rich agricultural areas of southern New Jersey and the rapidly expanding industrial development in the Delaware River Valley territory. Under Mr. England's direction, the Southern New Jersey Development Council was formed in 1950, the organization credited with bringing most industrial growth to the area.

In 1949, Mr. England's responsibilities included the reorganization of Atlantic City Electric, with the company's separation from the American Gas and Electric system. He has also been supervising directly his company's 40-million-dollar expansion program and has recently completed the transaction by which Atlantic City Electric acquired the Millville Electric Light Co.

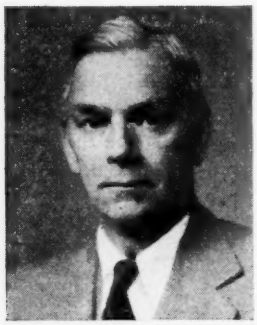
In community affairs, Mr. England's enthusiasm and productive energy is turned to the service of many civic organizations. He is a director of the New Jersey State Chamber of Commerce, Atlantic City Chamber of Commerce, Miss America Pageant, Atlantic City Convention Bureau, Vineland Training School, and the United Fund of Atlantic County. He is also Deputy Director of State Civilian Defense and a director and past president of the New Jersey Utilities Association. In addition, he has been a leader in such activities as the Community Chest and the Red Cross. In 1949, the B'Nai B'Rith of Atlantic City chose him as "Citizen of the Year."

Mr. England is married to the former Kathryn Bradley and is a member of the Atlantic City Kiwanis Club, Seaview Country Club, and Pine Valley Golf Club.

New Members EEI Board of Directors

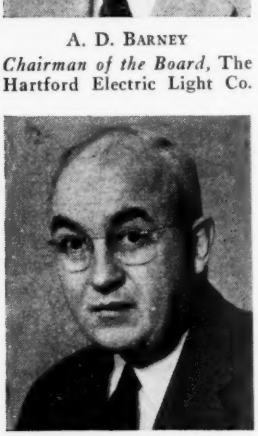
(Terms Expiring in 1955)

IN addition to the new members of the EEI Board of Directors pictured on this page, Robert P. Briggs and Harold Quinton, whose terms expire in 1954, and Walker L. Cisler, whose term expires in 1953, are pictured at the bottom of the following page. Walter H. Sammis, newly elected Institute Vice President, has also been named to the board for a term expiring in 1955.

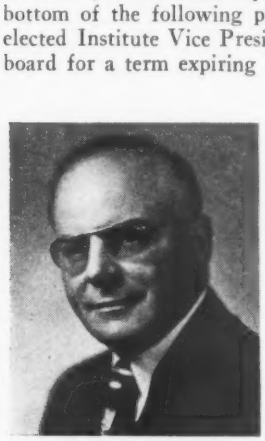


A. D. BARNEY
Chairman of the Board, The Hartford Electric Light Co.

GEORGE M. GADSBY
President, Utah Power & Light Co.

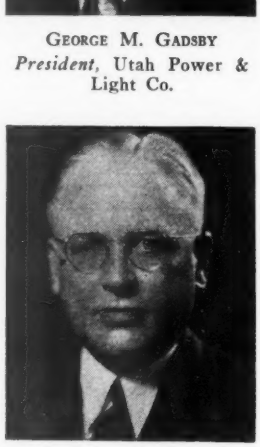


A. H. KEHOE
Vice President, Consolidated Edison Co. of New York, Inc.



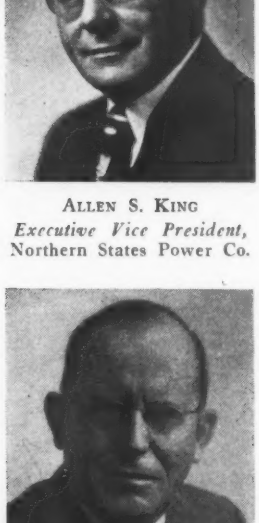
ALLEN S. KING
Executive Vice President, Northern States Power Co.

E. J. MACHOLD
President, Niagara Mohawk Power Corp.

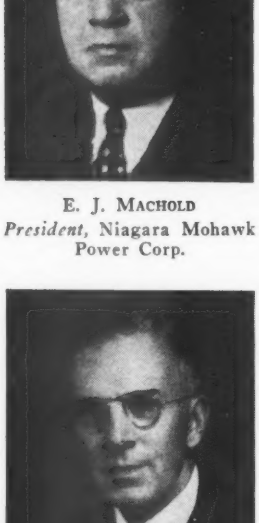


P. B. McKEE
President, Pacific Power and Light Co.

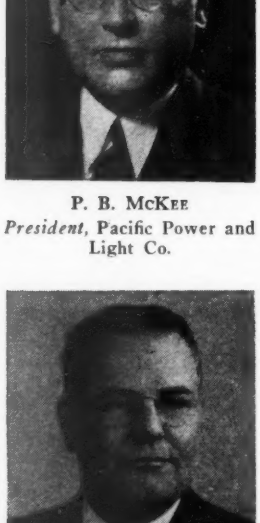
S. C. McMEEKIN
President, South Carolina Electric and Gas Co.



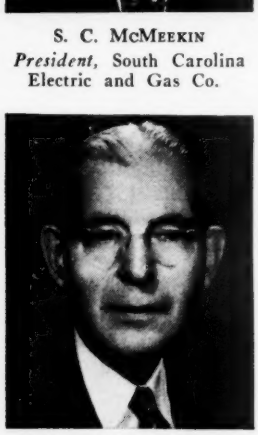
G. C. NEFF
President, Wisconsin Power and Light Co.



P. H. POWERS
President, West Penn Power Co.

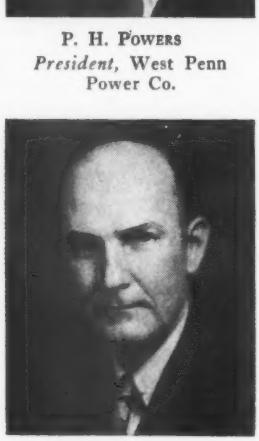


R. G. RINCLIFFE
President, Philadelphia Electric Co.

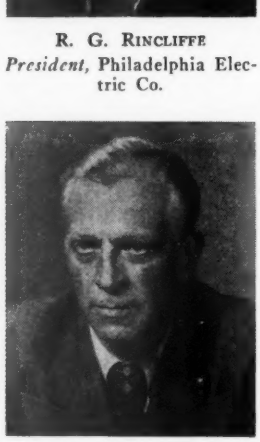


C. V. SORENSON
Vice President and General Manager, Indiana & Michigan Electric Co.

N. R. SUTHERLAND
Vice President and General Manager, Pacific Gas and Electric Co.



J. B. THOMAS
President, Texas Electric Service Co.



ALLEN VAN WYCK
President, Illinois Power Co.

Annual Report Award, sponsored by the Reddy Kilowatt Service and awarded to the company whose annual report "best illustrates, humanizes, and simplifies" company operations. This year the award was won by the Pennsylvania Power & Light Co. and was received by PP&L President Charles E. Oakes.

Four other electric companies were awarded Honorable Mention Certificates, including the Union Electric Co. of Missouri; New York State Electric and Gas Corp.; last year's winning company, Wisconsin Power and Light Co.; and Nova Scotia Light and Power Co., Ltd.

Twenty-three employees of the Union Electric Co. of Missouri received the Claude L. Matthews Valor Award, established by Claude L. Matthews, President of the W. N. Matthews Corp., to honor acts of devotion to duty wherein electric company personnel exercise extraordinary courage in efforts to maintain important electric service or to restore service in the shortest possible time.

The 23 Union Electric Co. employees cited for valor at the convention were specifically honored for their courage and resourcefulness in maintaining electric service across swift-running Missouri River flood waters in July, 1951, which threatened to disrupt the water supply, fire protection, hospitals, schools, and other important activities and services of St. Charles, Mo.

"The bravery, outstanding ingenuity, and perseverance shown by the members of this group in coping with unusual and hazardous conditions are in keeping with the highest traditions of the electric utility industry," the award citation stated, "and will stand as a continuing inspiration to the men of the industry in service to the public."

Mr. Matthews, the donor, was on hand to make the presentations in person, and the following are the Union Electric Co. employees named in the citation: R. C. Babka, Hobert Biermann, Milton Bruns, Carl Classen, I. L. Ditch, K. D. Dolde, E. W. Fahrenhorst, J. W. Gilbert, E. J. Giltner, J. A. Jobe, Chester Keller, H. M. McGuire, J. F. Miklovic, D. A. Neumann, H. D. Rilling, J. H. Rose, R. J. Shillito, A. R. Smith, W. R. Sorby, F. J. Spitznagel, S. S. Starr, D. D. Walkenhorst, and L. J. Watts.

On Tuesday noon, Philco Corp. played host to the ladies at a luncheon held in the Rainbow Room of the Carter Hotel, at which time Bonwit Teller staged a fashion show featuring the designs of nationally known couturiers. On Tuesday evening, delegates and guests were invited to buffet suppers, held in the Rainbow Room of the Carter, the Grand Ballroom of the Statler, and the Ballroom of the Hollenden, at which the Institute was host.

The highlight of the entertainment fare was the appearance of the Cleveland

WALTER H. SAMMIS
Newly Elected Vice President of the Institute

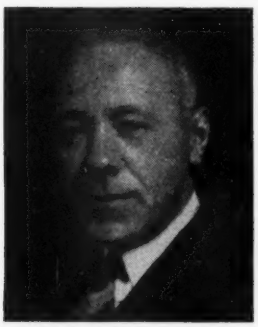
WALTER H. SAMMIS, President of The Ohio Edison Co., and Chairman of the Board of the Pennsylvania Power Co., was elected Vice President of the Edison Electric Institute at the Twentieth Annual EEI Convention in Cleveland. He will hold office for the next year, succeeding Bayard L. England, President of Atlantic City Electric Co., who has assumed the presidency of the Institute.

Born in Hempstead, Long Island, Mr. Sammis worked his way through Columbia University, graduating in 1917. During his summer vacations, he gained practical electrical experience by working as an electrician's helper for the Brooklyn Rapid Transit Co. and as a switchboard operator for the Public Service Co. of New Jersey. Following Navy service in World War I, in 1920 he entered the employ of Consumers Power Co., which was a subsidiary of a Commonwealth and Southern Corp. predecessor. In 1929 he became assistant to the vice president of Commonwealth and in 1938, vice president and director of Commonwealth. He was named a vice president and director of Ohio Edison Co. and of Pennsylvania Power Co., both Commonwealth subsidiaries, in 1933 and was elected president of Ohio Edison in 1944, president of Pennsylvania Power Co. in 1937, and chairman of Pennsylvania Power in 1950.

In late 1949, Ohio Edison became an independent company upon the dissolution of Commonwealth and, under Mr. Sammis' guidance, almost immediately acquired The Ohio Public Service Co. from Cities Service Co., which company had been ordered to dispose of its interests in Ohio Public Service by the SEC. With the approval of the Securities and Exchange Commission and the Public Utilities Commission in Ohio, the acquisition and resulting merger was completed in about six months, in an operation so outstanding, with such benefits to consumers, stockholders, and employees, that Mr. Sammis' company was chosen as a finalist in competing for the Charles A. Coffin Award, emblematic of highest achievement in the electric industry.

Mr. Sammis, who in previous years has been a member of the EEI Board of Directors, just completed service on the EEI Advisory Committee and, at the recent convention, was again elected to the board.

ROBERT P. BRIGGS
Executive Vice President, Consumers Power Co.



HAROLD QUINTON
Executive Vice President, Southern California Edison Co.

WALKER L. CISLER
President, The Detroit Edison Co.

Charles E. Oakes (left), President, Pennsylvania Power & Light Co., accepts the Reddy Kilowatt Annual Report Award for his company. Ash Collins, Director, Reddy Kilowatt Service, makes the presentation.

Claude L. Matthews (center), President, W. N. Matthews Corp., presenting the Matthews Valor Award Certificate to R. E. Moody, Union Electric Co. Executive Vice President, while George E. Whitwell (left), Chairman, EEI Prize Awards Committee, looks on.

Orchestra, under the baton of Associate Conductor Rudolph Ringwall, in a special program of musical entertainment presented through the courtesy of Westinghouse Corp. in the Arena of the Public Auditorium on Tuesday night. With popular television actress Betty Furness as mistress of ceremonies, harmonica virtuoso John Sebastian as featured soloist, and singer Mary Martha Briney, star of radio, television, and light opera, the program combined the talents of these engaging personalities with the excellence of Cleveland's justly famed symphonic group in an evening's entertainment which was both relaxing and diverting. Upon completion of the program, music for dancing was provided at the Cleveland, Statler, and Hollenden Hotels.

In giving grateful acknowledgment to the many individuals and organizations whose wholehearted cooperation made the Twentieth Annual Convention a memorable meeting, Mr. Gadsby expressed thanks to The Ohio Electric Utility Institute, which acted as host to the meeting, and to members of the Cleveland Electric Illuminating Co., who so ably handled convention details. Mr. Gadsby also cited the Convention Program Committee, composed of Paul B. McKee, President of Pacific Power & Light Co., Chairman, Elmer L. Lindseth, President of The Cleveland Electric Illuminating Co., and Alexander M. Beebee, President of the Rochester Gas and Electric Corp., for an outstanding job of selecting a fine group of speakers and topical subjects.

Sincere appreciation was extended to the Westinghouse Electric Corp. and Philco Corp. for their contributions to the success of the meeting, and the General Electric Co. is also to be commended for arranging an interesting and informative excursion to Nela Park for delegates and guests.

Electrical World likewise received deserved praise for publication of the *Unconventional Daily*, the convention's own newspaper, with its excellent coverage of convention events, activities, and personalities.

Among the 23 Union Electric Co. of Missouri employees who were recipients of the Matthews Valor Award at the 20th Annual EEI Convention were (left to right) E. W. Fahrenhorst, J. A. Jobe, L. I. Watts, S. S. Starr, A. R. Smith, Carl Classen, H. D. Rilling, R. C. Babka, J. F. Miklovic, Milton Bruns, I. L. Ditch, W. R. Sorby, H. M. McGuire, (front) R. J. Shillito, (back) H. O. Biermann, D. D. Walkenhorst, (front) Chester Keller, (back) K. D. Dolde, J. W. Gilbert, F. J. Spitznagel, and E. J. Giltner. Each award winner received a medal.

The President's Address

By George M. Gadsby

President, Utah Power & Light Company, and President, Edison Electric Institute

An address before the Twentieth Annual Convention of the Edison Electric Institute, Cleveland, Ohio, June 2, 1952

IT is my pleasure, on behalf of the Board of Directors, officers, and staff of the Edison Electric Institute to welcome you formally to this, our Twentieth Annual Convention. Thanks to the untiring and effective work of the Convention Program Committee, consisting of Paul B. McKee, Chairman, Alexander M. Beebee, and Elmer L. Lindseth, each a president of a great electric company organization, we are able to present to you a diversified, timely, and instructive program of subjects which will highlight the important areas of our fields of activity.

At our convention last year in Denver, President Louis V. Sutton, viewing the rapidly increasing requirements for electric power and recognizing the possibility of slippages in the manufacturers' schedules, still had the courage to say:

> When the increased power demand falls on our systems, we know from previous experience that we will have available increased capability with which to fill it.

Accomplishments During Year

He was right. The peak load for 1951 increased about 5.8 million kilowatts, while total system capabilities increased more than 7.3 million kilowatts. In only one section of the country was the possibility of a power shortage sufficiently serious to warrant a power allocation order from the Defense Electric Power Administration, and this order did not have to be put into effect because of timely rains which restored the area's capability to a level above load requirements. Temporary threats of shortages in other very localized areas were met by cooperation between electric companies and their large power users. Experience over the years, including other periods when for local reasons power shortages seemed imminent, has proven that Federal intervention is not required to take care of these situations, and that to the contrary, such curtailment orders as have in the past been issued have been psychologically disturbing and electrically of small consequence. The men in actual operation of the generating plants, regardless of ownership, can handle difficult situations more quickly and more effectively than any agency situated in Washington.

GEORGE M. GADSBY

The great strength which has been demonstrated, not only by individual electric companies but by combinations of companies working together to meet unusually large requirements, justifies our deep satisfaction in the fact that there has been no power shortage and our confidence in asserting that, if permitted to operate in the atmosphere of our American way of doing things, there will be no power shortage.

Having made these basic assertions, let us take a quick look at the supporting facts. During 1951, in this country, 6,979,000 kilowatts of new power generating capacity were added in plants contributing to the public supply and in industrial plants. This figure is not to be confused with the increase in capability, since factors other than installed capacity affect peaking capability. The investor-owned companies installed 70 per cent of the new 1951 capacity; Federal and other governmental installations accounted for 25 per cent; and additional installations in industrial and railway plants, the remaining 5 per cent. At the end of the year, our country led the world by a wide margin in available power, having a grand total of almost 90 million kilowatts, an increase over 1950 of about 8.5 per cent.

These figures fail to give the dramatic picture of the addition in one year of one-twelfth of the total capacity previously installed since the electric industry began some 70 years ago. This accomplishment came not from panic spending, but as a result of careful planning by competent minds since World War II. This planning and building was accomplished by manufacturers as well as by utility operators, and our full mead of praise must go to this country's giants who make the prime movers, boilers, switching and control equipment, plus the multitude of auxiliary apparatus found in the modern hydro- and steam-generating stations.

This expansion costs money, big money. During each of the past three years, our electric companies have spent over two billion dollars for bigger and better facilities. In order to get some perspective on expenditures of this magnitude, consider the figures coming out of a McGraw-Hill survey for the two years 1951 and 1952. This showed that 40 billion dollars will be spent for enlargement of industrial plants of all kinds, and almost seven billion dollars of this will be for electric facilities. In this two-year period the industrial capacity of the country will increase 16 per cent, or an amount equivalent to one-sixth of total investment in industrial plant built in all the years of our previous history.

Plans for the Future

Taking a short look into the future plans which are definite, it is indicated that the 12 billion dollar investment in electric service facilities at the end of World War II will multiply two and one-half times to a total of 30 billion dollars by the end of 1954. Do you recall not so long ago in Washington there was a school of thought which held that industrially America was overexpanded and complained because prices had to reflect the carrying charges on this excess capacity? How shortsighted can those economists be?

Let us take a quick reference to the

latest results coming from the Institute Power Survey Committee. For the country as a whole, the committee's 11th semi-annual survey, made this spring, shows for calendar year 1952, with median water conditions, an increase of about nine million kilowatts in capability and a peak load growth of some ten million kilowatts. Assuming that plant expansion will continue to keep reasonably well on schedule, this means we will wind up the year with a gross margin of capability over load in excess of seven million kilowatts. The percentage of reserve will not be as large as we used to believe was desirable, but with the better integration of neighbor systems and the operating abilities of our system operators, I believe this margin will suffice.

Engineers Think Ahead

In practically every issue of our trade magazines we find reference to the start of a new plant or the enlargement of an existing plant all over the country. Our engineers are now projecting the new capacity to go on the line in 1955 and 1956 and are thinking in terms of 1960. Their minds run not alone to numbers of kilowatts, but to higher and higher efficiency, larger unit sizes, higher steam pressures, and an entirely new level of transmission voltages. Last March in an address entitled "Vision and Power," Philip Sporn, President of the American Gas and Electric Co., presented to the first American Power Conference an excellent portrayal of advance thinking. Among other things he said:

> If we are to get maximum utilization of electric power, we need the most economical development and the most economical operation. . . . Production of electric power is a most complex and unique technical economic operation. . . . This . . . calls for a great deal of advance planning to avoid obsolescence due to inadequacy; that in turn means long reaches into the future. For unless the fog of the future is pierced by vision, neither size nor technical dimensions can be visualized. As a matter of fact, unless the social-economic trends are visualized, the very foundation for future systems cannot be developed. In short, sound development of power systems is not possible unless boldness and imagination—vision—in projection and conception are liberally intermingled with technical soundness and economic responsibility.

From my own experience in the past two years I can testify to the rapid pace the engineers are keeping. The duplicate in name-plate rating of a plant which started operation in 1951 will, when it starts generating this coming fall of 1952, embody new features so that with the same name-plate rated generator, the actual output capability will be 13½ per cent higher and the efficiency 7½ per cent better.

Burdens of Taxation

This result requires more capital, and this is where taxes and inflation play an increasingly villainous role. Our burdensome tax structure strikes from three angles: first, the additional equipment cost per kilowatt to compensate for higher taxes all the way back to the raw materials; second, the tighter money market because of the heavier drain on the investor's income to supply the insatiable demands of the Federal treasury; and third, the withering effect of taxes on labor's take-home pay. In the last case, the consequent resentment is not so much against the profligate government spender as it is against the boss, who becomes the only tangible target against which the aggrieved employee can vent his displeasure.

New plant equipment is increasingly complex and expensive, which brings new problems of personnel. In the modern steam-generating plant the investment per operating employee may well reach the astounding total of $300,000. By the same token, employee qualifications are being raised, so more and more emphasis is put upon education and experience in filling personnel requirements.

Cause of Labor Difficulties

As strikes and labor difficulties sweep the country, we must realize that taxation of the individual is one of the root causes. Then, paradoxically, out of employee dissatisfaction, no matter how caused, comes a demand for government interference and a greater reliance upon the labor boss who can exercise control over the executive and administrative departments, rather than an understanding of the true cause of the economic upset and application of the right methods of solution. We cannot shut our eyes to the developments of the past weeks and months. When thinking of personnel needs and relationships, facts as they confront us must be taken into account, and our best efforts must be aimed at straightening out current faulty economic thinking. Otherwise there will be much truth in this little poem:

Blessings on thee little man,
Barefoot boy with cheek of tan.
Trudging down the dusty lane
Without a thought of care or pain.
You're our best and only bet
To pay off the national debt.
Have your fun now while you can
Soon you may be a barefoot man.

If you have followed me thus far, you have beheld the magnificent power plant rising against the skyline and envisioned the further magnificence and efficiency in the still greater plant on the drawing board in the engineering department. About this time it may be well to stroll across the hall and see what the executive responsible for financing has on his mind. The pattern of financing new plant requirements is quite well established and I will not take time to discuss it other than to point out that borrowings are providing up to 60 per cent of capital requirements with stock sales and retained earnings, classified as equity money, furnishing the remainder.

Increase in Cost of Money

Looking back, it is fortunate that refunding operations which began some ten years ago were covered in a time of low-cost, long-term funds. When we go to the market now it is for new money which must come from current savings rather than reinvestment of funds derived from repayment of earlier obligations. This fact, plus the enormous capital requirements for industrial plant expansion outside our industry, has resulted in a normal, and I believe healthy, increase in the cost of money. Ample funds are still available if the borrower meets the market price. One of the greatest tributes paid to our industry is the evidence of faith on the part of institutional investors in us and in the private enterprise system. This is even more pronounced in the market absorption of large amounts of equity securities. I would like to quote from that source of wisdom called upon in many an electric company man's speech of the past few years. In an address before the National Conference of Electric and Gas Utility Accountants in April, Charles E. Oakes said:

> In 1951 the gross proceeds from the sale of new common and preferred stocks for all corporations totalled 2.1 billion dollars, of which the electric, gas, and water utilities accounted for 35 per cent. This is competition for the investor's dollar with a vengeance —competition which we may expect to prevail for some years ahead. Note

that the utility industry with a gross of only one-thirtieth of all industry must provide funds for constructing one-sixth of all plant, and to do so must call on equity investors for one-third of available equity funds each year. This is competition compounded.

It is all very well to talk about investor confidence, but we must not overlook the indisputable fact that continued confidence must rest on a solid foundation of performance and earnings. The engineering feats of our utility and manufacturing companies coupled with low cost of capital funds have combined to make the price performance of electric service phenomenal. The almost unbroken record of rate decreases continued, even though in a diminishing degree, until the past two or three years. Since then the very nature of our rate structures has maintained a decline in the average cost per kilowatthour. Now we can see no new factors which, by reducing over-all costs, will offset the upward pressure of inflation and taxes. This leaves but one avenue open and that is to increase rates so as to produce a return which will attract the new money for the expansion program. I am suggesting nothing new. Already some 265 rate increases have been granted, and 55 or 60 additional applications are pending. Yet, with all, the average price for power is still less than it was in 1940.

Processes of Regulation

While we believe in local regulation of rates fully to protect the public interest, we must face the fact that the processes of regulation often place changes in rates, be they increases or decreases, out of step with unregulated prices. Such a condition to a measure prevails today when the steep uptrend in the wholesale prices is levelling off at the time when electric companies must seek their increases. The resistance to the increases in the electric rate schedules stems more from a feeling against the fact of the increase than its monetary effect. In 1951 electricity represented but one and one-eighth cents out of the dollar value of goods and services produced and bu* seven-eighths of a cent per dollar of personal income.

Coupled with the consideration of rates is the need for intensified sales efforts to produce the revenues essential for support of the new capital invested in our properties. Each time it has appeared that there would be a levelling off of demand and aggressive sales efforts would be called into play, some external cause has intervened and postponed S-day. Early in 1950 it looked as though the upsurge following World War II had about been met, and soon the salesman should take to the road. The police action in Korea changed this overnight. Production for defense created new requirements of a high order of magnitude so that since the beginning of 1951 serious consideration has been given to curtailment of even such sales efforts as were being practiced.

More Emphasis on Salesmanship

We are now confronted with a somewhat unusual situation in that civilian consumer purchasing is declining, while savings are increasing. Certainly all consumer wants have not been filled, and it would appear that the reason must be a hold-back on the part of people to buy the things they would like to have even though they have the money in the bank to satisfy that desire. Credit controls have been a factor but they are now being released. I suggest case study of this situation by each company in its own locality to the end that the almost forgotten techniques of salesmanship be taken out of mothballs and more liberal appropriations of time and money be made for the sales department, including more funds for advertising. The fact that many of our companies have discontinued direct merchandising does not mean that company sales efforts are not as important as they ever were.

Farm electrification is far behind the progress made in the industrial plant, and now is the time to sell the farmer on the basis of electrification for his own profit. The rapid progress which has been made in taking electricity to the farm through the combined efforts of the electric companies and the rural cooperatives has enlarged this opportunity until it embraces almost all the farms in America. Based on Institute data as of the end of last year, electricity was used or available to more than 4,650,000 farms, 229,000 of which were added during 1951. Our agricultural colleges are coming up with constructive results and plans for streamlining farm operations, adapting production-line methods to farm processes. I strongly urge power companies to re-activate the cooperative groups of farmers, agricultural colleges, county agents, and manufacturers, following the pattern of 25 years ago when the Committees on Relations of Electricity to Agriculture gave great impetus to and obtained magnificent results in farm electrification. The opportunities today are greater than at any time in the past.

Closely aligned to production for profit on the farm is the intelligent development of stream management, viewed from what should be the primary objectives of soil conservation and stream control. It seems to me that these considerations should take considerable precedence over navigation and complete priority over power development. My only suggestion with reference to this broad subject is that our electric companies are perhaps closer to regional needs than any other agency and through careful study should qualify for taking part in local cooperative efforts aimed at most beneficial use of our waters and the prevention of improvident political considerations which may impose a heavy penalty on future generations.

The development of America and the unique advantages it now holds over all the rest of the world stem from our system of private enterprise and the basic theory incorporated by the founding fathers in the Declaration of Independence and the Constitution that government should be limited in power and exist only by and with the consent of the governed. As we study this foundation of our governmental structure, we cannot but believe that every safeguard the mortal mind of man could conceive was written into those basic documents to protect against a government by man and usurpation of power by a central government. In recent years keen minds have searched for crevices in that structure and interpretive openings through which new powers might be collected and exercised to the detriment of local authority and individual rights. Some of these attempts have been turned back, but all too many have prevailed.

Lack of Unity Weakens Defense

As a result of some faults and failings in our business procedures which have been exploited out of all proportion by those ambitious for the seizure of power, we have reached a point of real danger. The lack of unity among the various segments of business, and for that matter within different parts of our own industry, has weakened the defense which should have been made against these changes in our basic form of government. Can we now face the facts with courage?

In our industrial undertakings two elements are common to all. These are energy and labor. A monopoly of either carries with it control over every type

and form of industry and business. This fact was early realized by avowed socialists in this country, who mapped out and published an over-all plan for the nationalization of the electricity supply. We have witnessed too frequently the power of a labor organization, motivated by its own selfish aims, seriously curtail the functioning of our whole industrial machine and bring the government to heel. It is not too broad a statement to say that monopolist control by government or labor leaders of either or both of these essential ingredients of industrial production means the end of human liberty. In conducting the fight we have against the encroachment of the Federal government in a proprietary capacity in the manufacture and sale of electricity we have been fighting for the freedom of all industry. In a few short years we have seen the theory of incidental power transformed into the practice of transcendental power.

Misuse of Preference Clause

By distortion of the intent of Congress as expressed in the Rivers and Harbors Act of 1944 the Department of the Interior has used the so-called preference clause not to protect the interests of the various agencies enumerated in the Act, but in a highly discriminatory manner to justify construction of expensive and unnecessary transmission lines at the expense of the taxpayer and to the serious hurt of the electric companies established in the areas affected.

The Institute has long been aware of and has studied intensively the problems arising from the marketing of electric power by agencies of the Federal government. Two years ago EEI formally stated its basic position in response to an inquiry from the President's Water Resources Policy Commission. There is a growing realization by many taxpayers, members of Congress, and the consuming public of the need for achievement of the best principles and practices in marketing Federal power. The complexity of past practices should be simplified, and a fair, reasonable, and equitable program should be adopted to give recognition to the rights of all U. S. citizens and direction to the soundest functions of their national government. Every family in the United States is involved either as consumers of electricity or as taxpayers or both.

The taxpayers will not support costly Federal power programs indefinitely when they understand that they can get as much or more from private enterprise which operates under full public regulatory procedures. Much work needs to be done more fully to advise the public about the waste factor involved in the construction of some generating facilities and transmission lines by the Federal agencies when our companies are spending enormous sums to expand their facilities to meet the requirements of people in their operating areas. This Institute is collaborating with all organizations, both in and outside of the electric industry, which seek a constructive solution to these matters. Of course, the activities of the electric industry and others, leading to this desirable achievement, have already provoked severe criticism from those who believe in the predominance of the socialistic viewpoints of Federal public power planners. More attacks can be expected, but we can confidently believe that eventually right principles will prevail and have the support of a large majority of the American people.

Recently the public power group enlisted the aid of the President. Perhaps without full consideration on his part he signed a letter containing inaccuracies and fundamental misconceptions of rate regulation as provided in every regulatory law governing electric company rates. You may recall this letter, charging that if the Department of the Interior interpretation of the preference clause is not sustained and the big appropriations sought for duplicating transmission lines are not approved it would open the way for electric companies to make enormous monopolistic profits on the investment made by the Federal government for all the people.

Just and Reasonable Return

Mr. Truman should have known, and probably does know, that electric companies are allowed under all regulatory laws to earn only a just and reasonable return upon their investment in property used and useful for rendering service to the public. If the government builds dams and power houses and the electric companies have access to the power generated for distribution to their customers, they can make no profit whatsoever on the investment made by the government. They can only earn their "just and reasonable return" upon the investment made entirely at the company's expense in transmission lines, substations, and other facilities for delivering the government energy from the power plant to the customer. The President's concern apparently goes only to that part of the public served by publicly-owned systems and the cooperatives within this favored circle from which 80 per cent of the people of the country served by the investor-owned utilities are excluded. Just another example of the government exercising monopolistic power for the benefit of a privileged few.

Private vs. Public Power

There are now before the country some specific cases which stand forth in stark realism in the struggle of the public power group for socializing the nation's power supply. I shall enumerate four of the instances in which the Secretary of the Interior is attempting to stop development by private capital and pour hundreds of millions of dollars of taxpayers' money into the socialistic scheme.

In each instance private capital is prepared to proceed promptly, efficiently, and more rapidly than the Secretary even claims would be possible if the projects were turned over to his department for development. These specific projects are the Niagara River Redevelopment Plan, the Hells Canyon project on the Snake River in Idaho, the Kings River Development in California, and the Roanoke River Rapids in North Carolina. The determination of these cases will mark the future for this country in the battle of socialism versus American enterprise.

Perhaps the greatest need of our country today is mutual trust and understanding among every segment of our people—government, labor, capital, management, and the so-called "general public," which after all is nothing but a combination of the other groups. If the ultimate impact on the American individual were the directing motive of each of these groups, we would have cooperation instead of strife, amity instead of ill will, constructive correction of wrongs and poor practices instead of evil poisoning of the minds of one class against another. Great as this country is and tremendous as is its production, our standard of living and outpouring of goods and services of all kinds would be augmented to a miraculous degree if the Golden Rule and the Eleventh Commandment became the criteria of our policies and actions.

I can, with great sincerity, repeat the words of all of my predecessors when they stood as I do today at the exit door of their term of office. The past year has been one of considerable effort and rather strenuous travelling about the country, but the opportunity to become acquainted

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Recent Engineering Advances in Electric Power Supply Systems

By J. H. Foote

Vice President, Commonwealth Services Inc., and Chairman, EEI Electrical Equipment Committee

An address before the Twentieth Annual Convention of the Edison Electric Institute, Cleveland, Ohio, June 2, 1952

BIG things have been accomplished in power engineering in the past few years. As an indication of some of these accomplishments, major steam plants of highest efficiency are today being built for $150 per kilowatt compared with $125 in 1947 and $100 in 1940. Compare these figures with the general construction cost index which today is from two to two and one-half times what it was ten or 15 years ago. To our own engineers and to the equipment manufacturers belongs the credit for this remarkable performance in power plant construction in the face of rising costs. The average investment in total plant facilities per customer today is less than $500—not significantly higher than in 1940 or in the 1920's, for that matter, while the construction cost index has more than doubled. This affords again an over-all measure of real accomplishment on the part of our engineers in their design and construction supervision and of the manufacturers in furnishing equipment to go into that design and construction.

Nor does this remarkable evidence of holding down capital cost give the full measure of our engineering accomplishments. In the meantime, operating costs within the control of the engineers have been held down in similar fashion, while reliability of service has been substantially improved.

One further over-all indication of the fruits of alert, aggressive, and competent engineering: In the face of a rise in taxes from 17.7 per cent of revenue in 1940 to 23 per cent at the end of 1951, of an increase in the hourly rate of pay including cost of fringe benefits of about double that in 1940, and of an average rise in cost of coal from $3.40 to $6.05 per ton, the average price per kilowatthour sold to the residential customer dropped from 3.84 cents in 1940 to 2.81 cents in 1951.

I realize that this reduction in price

J. H. Foote

was brought about by the doubling of the customers' use of electricity in this period and that under the industry's promotional rate system this entitled him to a decrease in the unit cost. But these additional kilowatthours largely come from new plant, and this extraordinary performance has been made possible through the integration of engineering and technical improvements in design, construction, and operation. I know of no other item in the family budget that can show the record of the cost of electricity. Our well-directed efforts have borne fruit.

Challenge to Engineers

The years since the close of World War II have brought forth a challenge to the engineers of the electric light and power industry unparalleled in history. I have briefly described results which show that the engineers have more than met the challenge to accomplish the seemingly impossible.

Electrical loads are in process of doubling since the building of prewar plant and the hours use of that load has increased, putting extra burden on equipment. Unit costs of material, labor, and construction have more than doubled. The price of fuel and operating labor has increased tremendously. Federal taxes, rights of way, and other costs have so increased as to significantly affect the economic aspects of engineering problems.

To solve these problems of power supply the electric light and power industry has moved with resolution and dispatch. Plans have been prepared, appropriations have been made, construction has proceeded, and operating arrangements have been effected, all of which are bringing to customers a full measure of additional service of excellent quality and bargain price. Engineering plans and construction are continuing to proceed to meet the unprecedented demands expected in the years ahead.

How great an increase in power production has been accomplished may be visualized by considering that the total amount of electric generating equipment installed and now on order since the outbreak of World War II is roughly equal to the total electric load of the industry at that time. And the electric transforming, transmitting, and distributing systems are also in process of expansion to carry these tremendous increases in load.

Among the technical and engineering advances made by the industry are:

1. The use of very large generating units employing steam temperatures and pressures of higher values with consequent savings in fuel. Machines of up to 200,000-kw size are now designed for 1050 F, and 1100 F will presently be in operation on at least one system.
2. Pushing beyond the economy possible even with these high temperatures and pressures, the industry has recently committed for millions of kilowatts of reheat generating equipment designed for these new steam conditions, and giving prom-

ise of significant operating economies.

3. Construction cost has been reduced through the reduction in building volume, or through the actual elimination of much of the enclosing buildings.
4. Skillful arrangements of controls and attention to the design to reduce the number of operating positions have saved operating expense and have increased reliability.
5. Attention to details of bearings, couplings, physical clearances, and maintenance facilities has improved the reliability of all generating plant equipment.
6. Improvements in reliability make possible savings through the scheduling for maintenance a great deal of the essential equipment in the generating plant, together with reduction in investment for spare equipment.

While these generating plant improvements have tended to "steal the show," other departments have likewise progressed in engineering. Solution of many problems necessitates gradual application on added and existing facilities, rather than a completely new approach or design such as may be applied in a new generating plant. Continued attention is essential for full realization of benefits, and the results do not ordinarily lend themselves to simple measuring of percentage or cost. These advances are nevertheless of great importance.

Reliability of Transmission Lines

Main power transmission lines today are carrying heavier loads than ever before, and at the same time the reliability of these lines and associated equipment is being increased through more scientific design. Improved relaying and rapid reclosure of circuit breakers when tripouts do occur have increased the service continuity of lines so that the availability factor of transmission circuits is extremely high. At the same time, investment in lines and switching equipment is significantly restrained.

The construction and testing of an actual 500,000-kv transmission line by one company provided full-scale test and research facilities never before available. The know-how of large-scale, high-voltage power transmission received a tremendous boost thereby.

The value of street space, rights of way and property, combined with the substantial savings possible if duplication of facilities can be reduced or eliminated as such, have afforded a fertile field for engineering design and evaluation of that part of the system between the major transmission and the distribution substations. In other than metropolitan areas or underground areas of large cities this is commonly referred to as subtransmission and normally comprises overhead lines of 69 kv down to 23 kv or less.

Fewer and Better Lines

One way to save cost and improve operation is to build fewer but better lines. For example, it may be feasible to replace a system having old-style, 34.5-kv, double-circuit lines and connections with much better-performing 69-kv, single-circuit lines having lightning protection, co-ordinated insulation, fast relaying and immediate automatic reclosing, and enjoy greatly increased load-carrying ability with improved quality of service. This may result in less plant investment than might be required if 34.5 kv were to be retained and the load-carrying ability of the system increased at that voltage to handle the loads of tomorrow. On the other hand, the present lines and circuit breakers may be of modern design and there may be pole or street space for additional lines. Investigation will reveal the right answer. But investigation should be made.

Throughout the industry distribution systems have been undergoing strengthening, with engineering ingenuity as well as individuality definitely in evidence. The objective is, of course, to provide for the doubling and trebling of customer load which the future will unquestionably bring, while conserving the large investment in the existing systems.

The biggest factors influencing the engineering design are those of local conditions, and they may lead to contrasting solutions. Illustrative of these methods of resolving individual situations are higher primary voltages or increased capacity of larger individual feeders at existing voltages, both to require fewer substations of larger units; simple unit-type substations; group regulation of feeders; load transfer facilities on lines outside of substations; and planned use of mobile substation units for distribution system maintenance in lieu of duplicate facilities.

Developments in recent years have advanced the use of sectionalizers, reclosers, switched capacitors, and pole-mounted voltage regulators in solving the individual local problems of service continuity and voltage regulation. More use of these distribution tools is to be expected with the planned increases in circuit load ratings and substation capacities.

Distribution structures are becoming so costly, set and dressed, that there is real meat in design which gives each pole a substantial job to do and so specifies and locates it that replacement will be a long way off. Aerial cable developments and improvements, combined with the ever-present and increasing problem of tree trimming and clearances, have increased interest in this type of construction in many areas. In other cases, main primary circuits may be run high over trees with spans of 300 to 400 feet, requiring a primary pole only once in an ordinary block, and with short poles carrying secondaries and services interspersed as required.

Mobile substations of a size which may permit elimination of at least a portion of expensive duplicate and transfer equipment in distribution substations have been developed in collaboration with manufacturers. Further operating experience and analyses of maintenance problems, highway limitations, and station design may well effect added savings.

Service to Farm Customers

A marvelous job has been done in bringing reliable and economical power to farm customers so that company after company has been reporting electricity available to substantially all farms in their franchise territory. In general, this is single-phase service, and except for large motors, single-phase is probably entirely adequate for farm supply.

While the typical farm is well served from such service, the use of electricity on many types of farms will economically increase many fold within the next few years. The patterns are being demonstrated in different parts of the country. The types of use of power vary with the territory and with the type of farm, but it is becoming very evident that operations on very large farms may well justify three-phase service. It is entirely possible that the demand for three-phase farm service within the next two decades may be sufficient to make it economically practicable to develop designs for equipment and lines which will start a new cycle of the use of electricity in agriculture in certain areas of the land.

Executive and operational manage-

ment has considerable opportunity to assist in engineering direction and in the good results to be realized by those responsible for the analysis and design of the power system and its facilities.

For example, the effectuation of a well-worked-out plan and program for serving an area may require a comparatively substantial expenditure in the early stages to set up the plan with the first section of a new power supply. Executive decision to alternatively expend initially less dollars with prospect of greater future expenditure even with the realization of a poorer scheme may well be justified by financial considerations, but it would seem wise to have at hand a complete picture of the alternative programs worked completely through to a common point with respect to load-carrying ability.

Again, the operating department may not be charged with responsibility for fixed charges but may be very much alive to reduction in operating and maintenance expenses. Just what is the best balance in over-all annual costs may be determined by cooperative study by the several groups involved, the balance being evident when all the factors have been evaluated. Perhaps a change in practice relative to maintenance, testing or scheduling, or a change in design to facilitate testing and maintenance may allow significant savings in plant investment.

There is the matter of reliability and the calculated risk. For example, there are large systems whose generating plants have no spare exciters. There are equally large systems which provide spare exciters for generating plants without exception. Are there differing operating practices which justify this disparity in practice? Is the design of the excitation system such as to introduce elements of unreliability? Or is it that the policy is "to be on the safe side?" The same thing may be said of transformers, both single- and three-phase, and of other equipment. The full evaluation of all the aspects of the situation might make possible a calculation of the cost and risk factors and a determination of policy with respect to spare equipment.

It might be mentioned that policy with respect to responsibility for service interruptions is often more significant in determining the cost of a facility than would be imagined. Service interruptions of appreciable duration have generally become so rare that when one does occur through personnel or facility failure it becomes a matter of high management concern. Whether the policy is one of cooperative evaluation of all the causes, the probability of repetition, the cure and the cost thereof, or whether other policies are felt to prevail may be a matter for consideration.

Restudy of the power supply systems and each of the elements has been demonstrated as genuinely profitable. Load surveys and forecasts, coupled with comprehensive measurements and calculations, show the way and provide a pattern of reinforcing or rebuilding for future loads. The important thing is to make the study and to make it comprehensive—to take a fresh look at the performance history. Continuous planning is to salvage the good and improve the weak, and to look ahead another quarter-century in all construction.

Finally, it seems important to suggest that active collaboration in the work of the engineering committees of the Edison Electric Institute may well afford large benefits to the company and to those working on the committees. In addition, the entire industry and those it serves benefit significantly. The achievements of the electric light and power industry, including those of an engineering nature, have been outstanding and are continuing to be outstanding because of the sharing of ideas and experiences, because of the collaboration of engineers and operators in the solution of knotty technical and operational problems, and because of that incentive to accomplish results in terms of the more and the better for less and less which is resident in that feeling of personal responsibility inherent in the personnel fabric of a well-managed electric company.

The President's Address

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with so many of the fine people who constitute our industry has been a full and ample reward.

Much of the work of the Institute receives but little publicity and is visible to but the relatively few who are directly interested in such work. I can assure you, however, that our divisions and the committees comprising each of them are literally at work all the year round, and whether or not even they realize it, their end results are to enable our companies to do a better and more complete job in the service of our customers. I only wish time and my ability would permit such an acknowledgment of the work of these groups as would bring them to the attention of every utility man and woman as well as to the public whom they are directly serving.

The headquarters staff, under the able direction of Colonel Bennion, is constantly alert, progressive, and possessed of true vision. It has been a great pleasure to spend a considerable time with them at staff headquarters. During the year, progress has been made in coordinating more closely the activities of the Institute with our other industry organizations. As a group they ably fill the needs of our member companies at both national and local levels. So long as these organizations can be kept coordinated and synchronized, I feel their work is being accomplished as efficiently and as economically as could be done, even if it were feasible to consolidate all the work into one organization.

The most interesting and inspiring part of my experience of the past year has been the realization that our horizons are constantly being pushed farther out, and that we have in our midst men of true vision and great courage who are striving not for the selfish benefit of our companies alone, but for greater development of electric service in the true meaning of that word, and the preservation of our grand country. Unlimited opportunities still exist, and freedom will remain so long as the state shall be kept the servant and not the master of the people.

No Rebuttal

PRESAGING present-day opinion, an early condemnation of government-owned power projects occurs in *Cordelia Blossom,* written in 1914 by G. R. Chester, in a conversation between Cordelia and a colonel regarding a government electric scheme.

Cordelia—"It is the entering wedge into government control, which, if forced far enough, would throw all our industries into the hands of politics, already too powerful. It would destroy the individual enterprise by which we have become a great commercial nation and would reduce our most ambitious citizens to the ranks of mere employees."

Colonel—"Never have I heard so unanswerable an argument against government control so tersely put."

From *PG and E Progress,* June, 1952.

Charles A. Coffin Award Presented to Pacific Gas and Electric Co.

OUTSTANDING success in meeting the challenge of skyrocketing electric power demand in postwar California and opposing an uneconomic invasion of the utility's service area by government-owned power has won for Pacific Gas and Electric Co. the electric industry's highest honor, the Charles A. Coffin gold-medal award for 1951.

Philip D. Reed, Chairman of the Board of the General Electric Co., made the presentation to James B. Black, PG&E President, on the evening of June 3 in ceremonies conducted at the Institute's twentieth annual convention. George M. Gadsby, EEI President, presided.

The key to PG&E's award-winning achievements is the company's billion-dollar construction program, the largest ever undertaken in electric industry history. Begun immediately after World War II, the program was three-quarters complete by 1951, virtually doubling the company's electric generating capacity in six years.

According to the citation of award, "the company has served its area well, has dramatically demonstrated its ability and willingness to meet all needs for electric power, and has effectively convinced the people and the Congress that it is entirely capable of carrying out its responsibilities in these trying times."

In 1951, the U. S. Bureau of Reclamation shelved plans for building a costly and unnecessary government transmission system, only after PG&E demonstrated it was meeting the area's demands fully, and after the company had signed two long-term contracts which provided a market and outlet over company lines for power generated by the Bureau's Central Valley Project plants at Shasta and Keswick.

Unable to expand during the war because of material shortages, PG&E launched its spectacular construction program almost the moment war ended in 1945, adding seven new generating plants, rebuilding two, and enlarging two others, to raise its total kilowatt capacity to 3,049,400 by 1951. All of this expansion was soundly financed by private capital, attracted through securities issues.

PG&E was chosen after a special nominating panel, representing every section of the nation, had carefully screened the achievements of electric companies in 1951. From those companies deemed worthy of consideration for this year's Coffin Award, the winner was finally determined by a committee of judges composed of Dr. James R. Killian, President of Massachusetts Institute of Technology; C. W. Kellogg, past President of EEI; and Mr. Gadsby.

In commending PG&E's successful resolution of government competition, the judges' citation noted that "during the decade prior to 1951, the U. S. Bureau of Reclamation, while engaged in constructing and beginning the operation of the multi-million dollar Central Valley Project, essentially intended by Congress for irrigation and flood control, exerted every resource at its disposal in a prolonged attempt to establish a duplicating, government-owned commercial power system in the service area of the electric company.

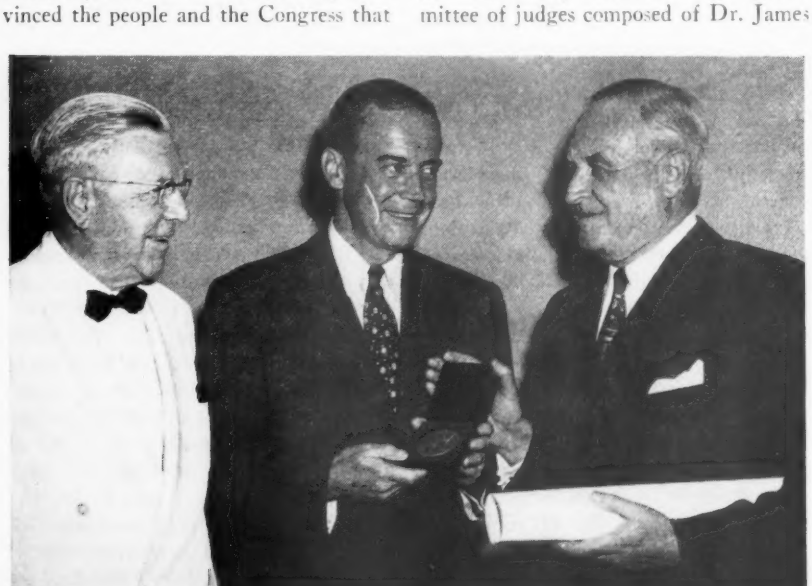
"With candor, patience, perseverance and courtesy," the citation continued, "the company proved to Congress and to the people that such a tax-free duplicating government transmission system was undesirable and wholly unnecessary in the public interest."

The company's "cooperative and far-seeing acts, which brought to all of the people of the area and to the nation's taxpayers the greatest economic advantage in utilizing the electricity generated as a by-product of a major irrigation and flood control project," were judged of "inestimable value" in "preserving the American system of free enterprise and in furthering the progress of the electric industry."

Pacific Gas and Electric Co., one of the nation's largest electric operating companies, includes half of the people of California and half of the state's power demand in its service area—a territory the size of the six New England states plus New Jersey, Delaware, and Maryland.

The Coffin Award, most coveted electric industry honor, was established 30 years ago by the Charles A. Coffin Foundation in the name of the General Electric Co.'s first president.

Consisting of a gold medal for the winning company and $1,000 for the company's employees' benefit fund, the Coffin Award has acquired national prominence for its significance in singling out exceptionally meritorious advances in electric service to the public by private companies.



James B. Black (right), President, Pacific Gas and Electric Co., accepts the 1952 Charles A. Coffin Award from Philip D. Reed, Chairman of the Board, General Electric Co., donor of the award. Retiring Institute President George M. Gadsby (left), President, Utah Power & Light Co., presided at the presentation conducted at the 20th Annual EEI Covention.

Are You Leading Your Safety Program?

By Dr. Walter A. Cutter

Assistant Director, New York University Center for Safety Education

An address before the Twentieth Annual Convention of the Edison Electric Institute, Cleveland, Ohio, June 2, 1952

THERE would seem to be but little need today to argue the need for or the advantages of a well-conceived, intelligently administered program of accident prevention. A program which promises, at the least, the following advantages cannot be ignored:

1. Reduction of production costs.
2. Reduction of insurance costs.
3. Elimination of material waste.
4. Reduced damage to machines, equipment, devices, and tools.
5. Reduction of absenteeism.
6. Increased worker efficiency.
7. Improved operational efficiency.
8. Improvement of quality of service.
9. Improvement of morale.

All of these advantages, which add up to greater net profit, one of management's prime objectives, are in addition to the main purpose of accident prevention which is the saving of life and the lessening of human suffering and hardship. The possibilities in reducing accident costs alone can be seen by noting from a previous study that the out-of-pocket costs of the private electric industry amounted to $95,000,000 in 1950, which means a loss of a potential income, after taxes, of $46,000,000, or 9 per cent of the industry's common stock disbursement.

Practically Realizable

The aforementioned benefits are not ideal, but practically realizable, and are the natural results of a successful safety program. If these benefits are not being gained, a review of our accident prevention programs is in order.

Similarly, there is little need to argue the value of a qualified, resourceful, and successful safety director. As will be seen later, the most successful results of accident prevention programs come when there is the highest degree of teamwork throughout an organization. On this particular team, the safety director must of necessity play a leading part. His caliber, his preparation, his methods, his administrative position in the company, all will be essential factors to his success. Therefore, our whole philosophy about accident prevention will be judged by the quality of the men we select. We will see that the job calls for more than love for one's fellow men, or the ability to call everyone by his first name, or the desire not to hurt anyone's feelings. Let us agree that the size of the job calls for a first-rate, trained man.

DR. WALTER A. CUTTER

Up to this point, let us assume that we are in agreement that accident prevention is desirable and that the safety director should be first-rate. In the light of these two agreeable propositions, it is strange to contemplate the undoubted fact that too many of us have only a sketchy idea of the nature of the accident prevention programs which we so blithely approve, nor can our methods of selecting safety personnel, frequently, give much support to the idea that we really feel that we must have first-rate men.

With respect to the first proposition, too many of us are still in the stage of seeing accident prevention as simply a praiseworthy attempt to keep people from being hurt or killed, and fail to see that keeping people from being hurt is but one important part of a whole concerted attack on industrial, operational, mechanical, and personal inefficiencies. If we accept the point of view that accident prevention is part of such a concerted attack, then we must accept the point of view also that the degree of success attained in preventing accidents becomes a valid measure of the operating efficiency of a total company, corporation, or enterprise of any sort. In turn, the adequacy of an accident prevention program as a measure will be conditioned by the quality of program, plus the support given it. To hold a point of view which is less comprehensive than this is simply to accept a general concept that "accident prevention is good," do something about it, and thus deny ourselves the full range of its benefits by the ineptitude with which we put the concept to work.

That consideration of accident prevention is not an academic matter, but a very serious and challenging problem, is attested by the statistical picture over these last years.

Fig. 1 is the familiar chart of frequency and severity rates in the electric industry. While the frequency rate (number of lost-time accidents per 1,000,000 man-hours worked) has shown substantial improvement since 1947, we are still today worse than we were ten years ago and not as good as we were 20 years ago—this despite the fact that more construction work today is being done by outside contractors whose records are excluded from this chart. With respect to severity (days lost per 1,000 man-hours), we have made no progress in over ten years.

Upsurge in Accident Costs

Now, lest we be tempted to be complacent and say "we are holding our own," Fig. 2 should dispel that idea. A quick glance will show why. As the number of employees has increased from 260,000 to 289,000 since 1935, the number of injuries increased from 6,529 to 7,086. But look at the rate of pay and what it does to the cost per injury—from $148 to $362, about 250 per cent increase. Bear in mind I am only citing direct costs. No indirect costs are included.

What does this mean? It means that to hold our own cost-wise, the frequency and severity rates should have been reduced drastically to compensate for the above cost increase, instead of remaining virtually stationary over the past decade.

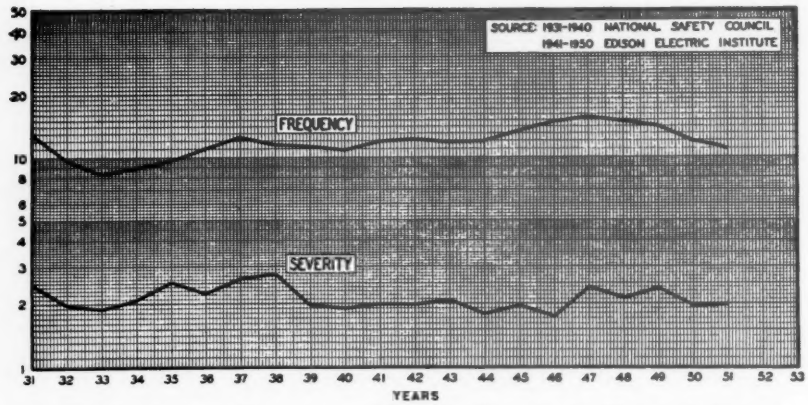


Fig. 1—Accident Frequency and Severity Rates in the Electric Industry, 1931-1951

With these facts before us and with our knowledge of the fine work that has been done by the EEI Accident Prevention Committee and the safety people and leading executives in many of the companies, we must raise the question—what is lacking? What should be done that isn't being done?

The answer I want to suggest to you is that we must have a more widespread awareness throughout the entire industry of the importance of accident prevention and more effective leadership by top management, followed by controlled, planned action all through the line organization. In view of all the facts, we should resolve that we will no longer deny our companies the benefits which flow from a vigorous, continuing accident prevention program.

In an address entitled, "Who Really Prevents Accidents?" delivered in April before the Southern Gas Association at Galveston, the speaker made an effort to show that accident prevention philosophy and techniques must permeate the entire line and staff organization. The reason for this is simple. Each person must feel and act responsibly for his own safety, and each person must perform designated functions as a team member in the company's program to keep everyone and everything safe. I wish to expand this idea through the top levels of management, beginning with the President.

There are no standard safety programs. There are, however, certain fundamental principles which are common to all programs. It is in the skillful application and development of the force of these principles and practices wherein programs differ and are or are not successful, as the case may be.

Close examination of programs which have been productive shows factors, common to all of them, which have been developed to a high degree in administration and conduct of the programs. There is in each of them an interdependency of relevant factors which makes them indispensable to the program and to each other.

Administrative Responsibility

Administratively, leadership and executive use of the safety staff are the principles found in successful electric company safety programs. So frequently we hear and see great efforts and great plans aimed at awakening and maintaining management's interest. This is an anomaly of sorts, since management is interested in safety, just as it is interested in every phase of operations which affect the economy, stability, and good will of the company. Planners are prone to refer constantly to "management," implying extra-human qualities. Such reference engenders a feeling that management is some sort of automaton, not possessed of human feelings, human desires, and human failings just like all the rest of us. The point is that the "line-of-sight" may differ and, therefore, interests should be brought to a coincidence of "line-of-sight."

Leadership is needed, not just interest. All supervision must exercise this quality if there is to be efficiency, which is synonymous with safety. The "top brass" must exercise leadership where it can be seen and felt and understood. It is not sufficient for the upper echelons of supervision simply to "go along" with proposals. They must sponsor and implement the proposals, actively and constantly. Thus, the example to all the levels below is set.

The materials and the tools of that leadership are gained through use of the safety staff in its proper function, which is as a staff adjunct to the executive. All matters pertaining to safety should be within the province of the safety staff, which acts in an advisory and consultative capacity. It is neither politic nor desirable to draw safety personnel out of purely staff functioning and inject them into line functions which, by their very nature, are authoritative. Authority belongs to the line organization and should be used by it in the exercise of leadership. All levels of supervision should regard the safety staff as their advisors and consultors, not their "whipping boys." Successful programs include such practices.

The execution of the safety program should stem from a firm and unequivocal statement of policy. This should set forth the definite commitment of management to achieve a safe plant and the manner of the achieving. For example:

It is the policy of the (.....)

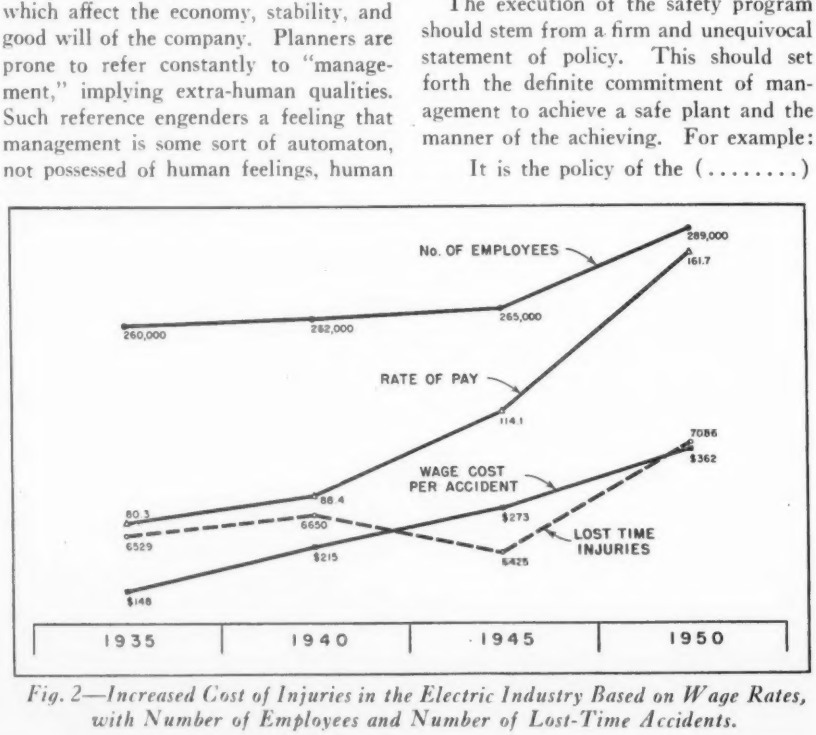


Fig. 2—Increased Cost of Injuries in the Electric Industry Based on Wage Rates, with Number of Employees and Number of Lost-Time Accidents.

Company in the operation of its facilities to give continuous management direction toward the provision of safe working conditions for all employees and the protection of the public.

The safety of all employees and the public is definitely the responsibility of the company officers, department heads, superintendents, foremen, and others who supervise employees, but accident prevention must be a united effort of management, union organization, and each employee to insure that safe practices are not only established but followed.

It is an integral part of the safety policy of the (.....) Company that no job being performed by any employee is so important and no service is so urgent that time cannot be taken by all concerned to perform the work in the right way—the safe way.

There can be no question as to the commitment of management in a statement of policy such as that, but that is only the beginning, the premise of leadership and the promise of better things. From these the employees look to management for a safe place to work, safe equipment to work with, and carefully worked out operating procedures as a safe way to work. Their part and their contribution generally will follow, in quantity and in quality, management's effort.

All planning and all programming aim at reduction and prevention of accident occurrences. Primarily, the end sought is reduction of risk. Every measure adopted, every step taken under a safety program is expressly or implicitly directed to a reduction in risk.

Elimination and control of accident causes and reduction of risk are so closely allied as to be synonymous to some extent. Accidents are caused, for the most part, by poor worker-attitudes or lack of skill or knowledge of all or part of the job. A small percentage (estimated 10 to 12 per cent) are due to mechanical causes, and a very small portion (less than 2 per cent) are caused unavoidably or by acts of God, which means that more than 85 per cent of all accidents involve personality traits, shortcomings, or faults. Therefore, reduction in risk and control of cause would seem to lie in inducing safe work habits in all workers.

Elimination and control of mechanical faults and hazards is an engineering job, but it is engineering with an appreciation of the fact that whatever it is that is engineered must be operated, used, or put to effective work by human beings; it is engineering which provides for the behavior and reactions of human beings. Benefits of a more or less extensive nature are to be realized in safety, worker efficiency, and cost reduction when risk is reduced or accident causes removed, whether they be mechanical or personal.

Reduction of risk, elimination or control of accident causes—these are the primary aims of safety planning. Achievement of these aims requires utilization of every aid—personnel and employee relations, medical (including psychologists), industrial and plant engineering, methods and procedures, plant security. There is no phase of organization life nor any factor of its functioning that does not affect or influence safety. Frequently, accident investigations carried to their logical conclusions will reveal weaknesses in one or more of these elements, so that fuller compliance must be secured. These are the aims and the means found in successful programs—not elaborate but simple, factual, logical, and straightforward.

Training

The last point, to which all the others are directed and upon which they are dependent, is training, a much abused and very much misunderstood function. Training is not a simple matter of lectures or class work, texts or rule books, or tell, show and "turn-'em-loose."

Training requires planning, constructive thinking, continuity. Management must know, or must learn, that training is for learning, and learning takes a long time. Occasional or sporadic attacks will have occasional or sporadic effects. Learning is accumulation by absorption and accumulation implies time. The problem of training is not, for instance, the act of teaching a man to check a job before he starts or of putting on goggles. It is more far-reaching than that. It must establish the habit in the employee of checking every job before he starts or of wearing goggles on all those daily tasks at which common sense requires goggles to be worn.

Management expects that training will produce in a man skill at his job and understanding of the job and his responsibilities in the job. Management must realize, as well as expect, that the desired results of training can come only with diligence and patience. Time is a definite requirement. It may be asserted that one of the most expensive economies which we can practice is failure to train properly.

To this must be added the realization that while group training is desirable as well as necessary it is, at best, only portal training, an introduction. Training that brings about the desired effect is continued and continuous individualized training—specific training in specific tasks or skills, to the individual by individual instruction. Differences, wide differences, exist among workers in habits, in abilities, in attitudes, in capacities. These differences all argue against dependence solely upon group training and group appeals to achieve safe-conditioning of workers. At least some attention to these differences, and the application of personalized training, is indicated to increase effectiveness of effort.

Safe habits are not built by "shot-in-the-arm" training techniques; neither is a high-powered, elaborate organization necessary. What is needed is the steady application of minutes a day to review, discussion, exchange of ideas, and sharing of information by the supervisor with his group. The attitude of the workers will be most greatly influenced, either for good or bad, by the attitude of the supervisor toward safe procedures, safe methods, and safe equipment.

Here we come to the basic need of the entire program—training and re-training of supervisory personnel. The greatest direct responsibility for a safe plant, a safe organization, is placed on the foreman, the last echelon of management. But what effort is made to teach him the things he must know? And what effort is made to teach him to teach others? The program, no matter how well planned and implemented, cannot be successful unless it includes furnishing to supervision the necessary tools with which to make it effective, that is, a basic grounding in the principles of safe work and in the effective means of teaching others.

The Simple Truth

Finally, let us emphasize a truth so simple that both the truth and its significance may be overlooked. The simple fact is that by achieving successful accident prevention we are doing the same things in the same way that we should be doing to achieve successful operations. But we are doing them better, with that plus element which will guarantee that the operations, and the use of men, tools, equipment, and all else will be equally

successful. Accident prevention, as is said so often and so truly, is not something "added on," but rather the realization of the highest type of efficiency.

Earlier in this paper, the statement was made that "there are no standard safety programs. There are, however, certain fundamental principles (and practices) which are common to all programs. It is in the application and development of the force of these principles and practices wherein programs differ and are or are not successful, as the case may be."

This is but another way of saying that each accident program must be tailor-made, but like good tailoring each individual program must be characterized by approved details in execution. The virtuosity in accident prevention lies in the skillful blending of established techniques and procedures to meet individual situations. As with the instruments in a symphony orchestra, all of the elements of sound safety programming must be present, ready to be called on as needed.

The correctness of these observations is attested to by studying the safety programs of seven utility companies with good records and abstracting elements which are common to each (Fig. 3). While no attempt has been made to list every practice, there are sufficient major items shown to give a clear indication of the essentials of successful accomplishment. Let us analyze the individual items shown in Fig. 3.

1. Management leadership and participation require all executive members to assume their proper responsibility to safety in their organization, to participate actively in all of its planning and execution, and to feel and show that they consider the provisions for safety to apply in equal force to themselves as to any and all members of the organization. Management should commit itself unreservedly to accident prevention by an unequivocal statement of safety policy, and then back it up.

	COMPANIES	1	2	3	4	5	6	7
1.	MANAGEMENT LEADERSHIP & PARTICIPATION	✓	✓	✓	✓	✓	✓	✓
	SAFETY POLICY STATEMENT	✓	✓	✓	✓	✓	✓	✓
2.	SAFETY DIRECTOR (OR EQUIVALENT)	✓	✓	✓	✓	✓	✓	✓
	SAFETY INSPECTIONS	✓	✓	✓		✓	✓	✓
	SAFETY RULES	✓	✓	✓	✓	✓	✓	✓
	CONSULTATION WITH SAFETY PERSONNEL ON DESIGN AND SAFETY OF EQUIPMENT		✓	✓	✓	✓	✓	✓
	OBSERVATION PLAN		✓	✓	✓			
3.	CENTRAL COMMITTEE	✓	✓			✓	✓	✓
	DIVISION OR DEPARTMENT COMMITTEES		✓		✓	✓		✓
	SPECIAL COMMITTEES	✓		✓		✓	✓	
4.	ON-THE-JOB TRAINING	✓	✓	✓	✓	✓	✓	✓
	JOB BREAKDOWNS	✓	✓	✓		✓	✓	
	AWARDS	✓	✓			✓		✓
	DISCIPLINARY ACTION			✓		✓	✓	
	PROTECTIVE EQUIPMENT	✓	✓	✓	✓	✓	✓	✓
5.	VISUAL AIDS AND POSTERS	✓	✓	✓	✓	✓	✓	✓
	PUBLICITY	✓	✓	✓	✓	✓	✓	✓
6.	MEDICAL, FIRST AID AND RESUSCITATION	✓	✓	✓	✓	✓	✓	✓
7.	FIRE PREVENTION	✓	✓	✓	✓	✓	✓	✓
8.	AUTOMOTIVE SAFETY	✓	✓	✓	✓	✓	✓	✓
9.	PLANT PROTECTION AND DEFENSE PREPARATION	✓	✓	✓	✓	✓	✓	✓

Fig. 3—Common Elements of Good Safety Programs (Seven Electric Companies with Good Records).

2. A safety director, whatever name or title he may bear, should be a staff consultant and advisor to top-level management. He is not a line-organization man and should not have either line responsibility or line authority.

Safety inspections of all operations, property and equipment should be regularly accomplished. The inspections, by whatever unit accomplished, should be complete and a basis for action.

Safety rules should be regarded as guides to safe conduct and a normal part of operating procedures.

The safety director, or members of his staff, should be consulted on all matters of design, construction, alteration, equipment purchase, and personnel placement.

An observation plan for discovering unsafe actions or conditions and providing for proper reporting and action upon such reports can be a very useful safety tool and an instrument for good morale.

3. Most effective programs make use of committees. Those usually found are central (executive) and division (department) committees. The central committee should be led by the president or general manager as chairman and contain all of the executive heads of divisions (or departments) with the safety director as secretary. The members of the central committee are the chairmen of the division committees. The central committee makes and determines policy and policy interpretations and operations under the program. Division committees perform in like manner, within their scope, for their own divisions, integrating with the central committee. Special committees, such as engineering, fire, mining, accident investigation, etc., may be used as permanent bodies or called into use as needed.

4. On-the-job-training by trained and competent supervisors is a requirement in any production program. It must be continuous and it must contain all the safety instructions as part of operating procedure. Job breakdowns, which detail each step of the job and include safety precautions and spot the hazards, are required if on-the-job-training (or any training) is to be effective.

Awards and disciplinary action are a matter for individual companies to determine. It should be remembered, however, awards should mean something;

(*Continued on page* 243)

The Far-Reaching Implications of the Niagara Controversy

By Earle J. Machold
President, Niagara Mohawk Power Corporation

An address before the Twentieth Annual Convention of the Edison Electric Institute, Cleveland, Ohio, June 3, 1952

THE progress which is capable of achievement under our private enterprise system finds no better exemplification than in the history of the industry we represent. We need not go back much further than the turn of the century to find the beginning of our era of electric light and power. Yet, in that infinitesimally short period of the history of human accomplishment, the product we make and sell has become a vital force in our continued national development, our economy, our standard of living, and in practically every aspect of our daily activity. Indeed, the development of our modern civilization has been geared substantially to the progress made in the art of generating and transmitting electricity. For this progress, modern civilization is indebted, first, to those members of our industry whose genius, vision, and personal incentive for accomplishment made it possible; and second, to those individual men and women of America who, having faith and hope in the continuance of our way of life, to which the private enterprise system is basic, supplied the indispensable risk capital.

Pioneering Developments

We of Niagara Mohawk Power Corp., operating in upstate and western New York, are especially proud of the accomplishments of our predecessors who pioneered at Niagara Falls. They demonstrated the feasibility of large-scale hydroelectric development and of long-distance transmission. Our Adams Station, built in 1895 on the Niagara River above the Falls, was the world's first major hydroelectric development and, with the introduction there of alternating current, power was transmitted from the Falls to Buffalo over the then unheard-of distance of 20 miles.

Today, Niagara Falls is again the scene of developments of tremendous significance to our industry and its investors and employees. However, unlike the historic developments which heralded a bright new era of electric light and power, the present situation is fraught with the most ominous threats yet made to our industry and to the private enterprise system which it so well typifies. If the over-all hydroelectric development of the Niagara River by the government can be justified, then the extent of future public electric power expansion is limited only by the desires and ambitions of the public power advocates and the tax-paying capability of the citizens of the nation.

EARLE J. MACHOLD

The Niagara Falls controversy now pending before the Congress followed the ratification of a treaty in 1950 between the United States and Canada permitting the diversion, above the Falls on the American side, of all of the water in excess of that necessary to preserve the scenic spectacle. This additional diversion will develop net additional generating capacity of 1,132,000 kilowatts. Up to now, utilizing the limited quantity of water made available under earlier international agreements, the Niagara Mohawk Power Corp. System constructed and has operated the only American development at the Falls—its Adams Station with an installed capacity of 80,000 kilowatts and its Schoellkopf Station with an installed capacity of 365,000 kilowatts. Beginning in 1947, in anticipation of the 1950 treaty, joint studies were undertaken by engineers of the Federal Power Commission, the Power Authority of the State of New York, and Niagara Mohawk Power Corp. which culminated in a three-stage plan of over-all development to produce the additional capacity I have indicated.

Except for minor differences, the plan is one which our System has had on file with the Federal Power Commission and has sought to develop for over 30 years. For over 50 years our engineers have engaged in careful, detailed studies of the waters of the Niagara River with a view toward making available the greatest amount of power consistent with the preservation of the scenic beauty of the Falls which, of course, has been a prime consideration of all concerned. Our studies included the construction of a model of the river and the Falls, reproducing the precise effects of various degrees of diversion. In short, we have long since satisfied ourselves as to the best plan of development, and now it has been confirmed by both the Federal and state authorities.

Congress Considers Three Bills

Upon ratification of the 1950 treaty, the application we had in readiness for the issuance of a license by the Federal Power Commission could not be filed, since the action of the Senate, in ratifying the treaty, expressly reserved for determination by the Congress the question as to who shall utilize for power purposes the additional waters made available under the treaty.

Three sets of bills are pending before the Congress. Each authorizes construction of the same plan of over-all development, which would cost about $350,000,000. Under the Lehman-Roosevelt Bill, the Federal government would construct the over-all development with

provisions for the later transfer of the project to the Power Authority of the State of New York under conditions which the state has already rejected. Under this bill, the project would be constructed with Federal funds derived from the tax revenues paid by the taxpayers of the nation. Under the Ives-Cole Bill, the State of New York, through its Power Authority, would finance, construct, and operate the project. Under the Capehart-Miller Bill, the project would be constructed with private capital by private enterprise without one penny of expense to taxpayers, Federal or state. Private enterprise would be represented by five New York State electric companies who would pool their resources for this purpose. These companies are Central Hudson Gas & Electric Corp., Consolidated Edison Co. of New York, Inc., New York State Electric & Gas Corp., Niagara Mohawk Power Corp., and Rochester Gas & Electric Corp.

Senate and House Hearings

Hearings were held in August and September, 1951, on these bills before the Senate and House Committees on Public Works, but neither committee has taken any action.

If the public power advocates prevail, the government, of course, will develop the huge undeveloped power potential of the Falls. You may ask, "But why is this of greater importance to the public power program and more threatening to our privately owned electric companies than the government projects completed and proposed in other areas of the country?" "Why," you may ask, "is this not another already familiar manifestation of the expanding public power program?"

In brief substance, the answer is that the proposal for government development of the Niagara River constitutes the greatest and boldest step yet undertaken by Federal public power advocates, because they must concede the utter absence of any of the traditional functions of government in the project. They concede that a government power project at Niagara Falls would not be a by-product of any recognized government activity. They concede that the Niagara Falls project has no relation to any hitherto recognized public service or to any other public project, actual or contemplated. They must concede that 100 per cent of the cost of construction and operation would be charged to power. A government project at Niagara Falls would place government directly in the power business, subjecting the privately owned electric companies within transmission distance to competition of a most unfair and most destructive nature.

Let us analyze the accuracy of these conclusions. The required diversion of the waters of the river will take place a very short distance above the cataract. The waters will be returned to the river a very short distance below the cataract. The length of the tunnels from the point of diversion above the Falls to the power plant at the lower rapids will approximate five miles. Obviously, the construction of a dam or other structure in the river is not involved. Obviously, not one penny of the hundreds of millions of dollars of cost involved in diverting and utilizing the water for power purposes can be said to be devoted to the improvement of navigation. There are not and never have been in the area in question the remotest considerations of flood control. State park development lines the bank in the immediate vicinity of the scenic spectacle. Beyond that there exists one of the most intense concentrations of industrial development in the nation, located between the river and the heavily industrialized city of Buffalo, some 20 miles away. Areas of this nature are hardly to be identified with irrigation, reclamation, sanitation, or flood control projects.

Relationship to St. Lawrence Seaway

We are often asked whether the Niagara project is in any way related to the proposed St. Lawrence Seaway and Power Project. There is absolutely no relationship whatever. The proposed site of the St. Lawrence project is well over 200 miles from Niagara Falls, far to the north and east of the Niagara development. The waters of the Niagara River which will be diverted will be returned to the Niagara River before it flows into Lake Ontario. From a physical, operating, engineering, or any other point of view, there is and can be no relationship between the two projects. Nor is there any other Federal project, on the Niagara River or on any other body of water or anywhere else, which can be said to have any connection whatever with the proposed over-all development of the Niagara River.

It takes no extended argument to demonstrate that a government project at Niagara Falls would be a single-purpose project—and that purpose, the generation and sale of electric power. The nature of the area and of the river, the nature of the enterprises and of the industrial development located there, and the nature of the hydroelectric development which all interests agree upon as the most desirable, make the conclusion inescapable that a government project at Niagara Falls would place government purely and simply in the power business. We have examined most carefully all of the statements and claims of the public power advocates, both before the Congressional committees and elsewhere, but we have failed to find even an attempt to justify government development at Niagara Falls as an incident of a government function heretofore relied upon as justifying such developments by the government.

Line of Demarcation

For these reasons alone, it is clear that the Niagara Falls controversy represents a threatened new, broad encroachment upon the privately owned electric industry. Heretofore, the multiple-purpose aspects of government projects have afforded for us a second line of defense to which we have been required to retreat during the past 20 years under the relentless pressures and attacks of public power advocates. This line of defense or of demarcation between private and public power has frequently become vague and nebulous, especially with increasing publicly owned steam capacity. We have, nevertheless, tried to believe the assertions of the public power advocates seeking to justify governmental development, that multiple-purpose projects mark not only the constitutional limits of public power, but the limits of the desires and ambitions of public power sponsors.

While I have referred to multiple-purpose projects as having constituted for us a second line of defense, we should all be keenly aware that there is no third line of defense. If the government can develop Niagara, the territory of every company, regardless of the nature of the territory or of the public service the company is rendering, and no matter how many thousands of miles removed from New York State, is susceptible of public power development.

From that point of view and for purposes of comparison with the territory

and service of other companies, let us analyze the territory and the electric service of our group of five companies in the State of New York. Government multiple-purpose projects, by their nature, have been located in areas where the power aspects of the project have produced a radical effect upon the power economy of the area as a whole. This has been so because the additional generating capacity made available has been tremendous in relation to the electric generating capacity already existing in the area. On the basis of this experience and without inquiry into the facts relating to the Niagara, public power advocates, in order to advance their position, have labelled New York State as an area of "desperate power shortage" — a "power-starved" area. But here are the facts.

The installed capacity of our group of five companies, and there are, of course, several other privately owned companies in the state, is approximately 6,500,000 kilowatts. We have under construction at the present time in excess of 1,250,000 kilowatts of additional capacity, more than the entire additional capacity of the over-all Niagara redevelopment.

This construction will be completed long before any additional Niagara power can be made available, and the additional Niagara capacity would then represent only some 14 per cent of the installed capacity of just our five companies. Even this percentage is reduced when effect is given to the construction which we have planned for installation before 1960 but not yet commenced. In the Niagara Mohawk System alone our total projection from 1952 to 1960 is a minimum of 850,000 kilowatts of additional capacity.

Private Company Record in New York

In 1951 our five-company electric sales, not including our intercompany sales and sales to other electric companies, exceeded 28 billion kilowatthours. The first farm was electrified in New York State more than 50 years ago, and New York State is today the nation's second largest dairying state. Electric service is available to practically every farm in the state, and 96 per cent of them are electrified. The remaining 4 per cent are either very isolated, or their continuance as farms is doubtful. Contrast this situation with the TVA area, for example, where in 1933 only 3 per cent of the farms were electrified and where today about 18 per cent are still not electrified.

In our territory, the requirements of tremendous industrial concentrations are being met. The defense load of my own company alone approximates 400,000 kilowatts, and in the past 15 months we have delivered over a billion kilowatthours to just one defense plant.

In upstate New York, electric rates are lower than the national average; the average usage of residential and farm customers is higher than the national average.

Power Surplus in Northeast

If one desires any further demonstration of the extent to which the public power advocates have distorted the power situation in our territory, reference need only be had to the recent report to the Defense Production Administration by the Electric Power Advisory Committee. That committee found that the Northeast region will have a surplus of power in 1953, which will increase in 1954.

As you can easily see, by intervening in our territory, the Federal government would be preventing private enterprise from doing what private enterprise can, and under our form of government it is expected to do for its citizens. On the contrary, public power encroachment would prevent private enterprise from continuing to do in the future what it has already demonstrated it can so well do for the benefit of all. While it is a proper function of our form of government to aid and to stimulate private enterprise, the stifling of private enterprise can lead only to a totalitarian form of government. With all our strength we must resist such trends lest they destroy the only form of government under which we can continue to be free.

While the other arguments which public power sponsors advance are equally without sound basis, they corroborate the seriousness and scope of the threat which the Niagara controversy has for the private electric industry of the nation as a whole.

The public power advocates rely heavily upon that old chestnut that government power means cheap power. The reasons which render this proposition entirely fallacious are well known, and I do not propose to present them in detail. I have yet to hear a public power advocate deny that the difference in the cost of public and private power stems from the tax inequality. The task force of the Hoover Commission on Organization of the Executive Branch of the Government, reporting on Water Resources Projects in January, 1949, concluded after a careful analysis of private and public power bills that, "In general . . . the differential . . . is roughly equal to the tax component."

In this connection, the report concluded that payments in lieu of taxes constituted a small fraction of the taxes payable by private enterprise; the equivalent of taxes, local, state, and Federal, paid by private enterprise is not included; and, as is clear from official government reports themselves, the power investment of public projects is seriously understated by omitting interest during construction and by charging substantial portions of construction costs as well as operating costs to non-power items. Moreover, the Comptroller General advises that various costs related to employee benefits are incurred by other Federal agencies for TVA's benefit and not included in TVA's financial statements.

Alleged Savings by TVA

It is also of interest to note that in its 1951 Annual Report, TVA boasts that "Consumers in the TVA region paid approximately $52,000,000 less for electricity in 1951 than they would have paid for the same amount of electricity under the average rates prevailing in the rest of the United States." It appears that the report has reference to the retail distribution of TVA power to residential and farm customers. The true character of this alleged saving is demonstrated by the situation in my own company. In 1951, of our total electric revenues of some $154,000,000, approximately $43,000,000 were derived from residential and farm customers. But we paid, in 1951, in Federal, state and local taxes, attributable to all our operations, in excess of $40,000,000, an amount almost equal to our total residential and farm revenues.

The 145 municipal and cooperative distributors of TVA paid in the aggregate only some $4,500,000 of taxes and tax equivalents, while TVA itself paid less than $2,500,000. Additionally, while we paid interest charges in 1951 of approximately $7,280,000, the 145 municipal and cooperative distributors

of TVA power paid in the aggregate interest and debt expense of less than half of that amount. TVA itself charged to its power operations only some $864,000 for interest, the bulk of its funds being obtained without interest from the taxpayers of the nation as a whole through Congressional appropriations.

The net result, on any basis of comparison which begins to approach fairness, is that the true cost of the power sold by our privately owned system has been less than the true cost of TVA's public power. The apparent difference between public and private power rates is attributable to the allocation of public power costs. Paying only part of the cost, the consumer is subsidized as to the rest by his fellow citizens, the taxpayers of the nation, who are already struggling under a back-breaking tax burden.

Even on TVA's grossly unfair basis of comparison, it should be noted that the difference in cost may be expected to narrow as the proportion of TVA's steam capacity increases. By 1954, some 47 per cent of its total capacity will be in steam generation, and TVA has announced the necessity for increasing its industrial rates to compensate it for its increased generating costs.

At Niagara, in addition to requiring the appropriation of hundreds of millions of dollars of public funds, governmental development, except for the relatively minute payments which might be made in lieu of local taxes, would yield no revenue for the support of local, state, or Federal governments. We have estimated that in the event of private development we would pay in such taxes at least $23,000,000 annually, a sum which, in some 15 years, assuming the continuance of current tax rates, would return to those governments an amount of taxes equal to the entire estimated cost of the development.

Security Factors in Construction

A further argument asserted by sponsors of a governmental development at Niagara Falls and equally applicable to any project anywhere relates to the nature of the construction of certain aspects of the project. A sponsor of the Lehman-Roosevelt Bill has asserted that the necessary waterways must be constructed in a special way to minimize security hazards, and that such construction would involve additional costs which the private electric companies would be unwilling to spend. As demonstrated by the public files of the government, this assertion is absolutely contrary to the facts.

Recently, the Office of the District Engineer of the Corps of Engineers of the United States Army recommended a Niagara redevelopment plan to be constructed by the Federal government under which the necessary diversion of water around Niagara Falls would be through a single open canal 250 feet wide at the surface and approximately five miles long. Perhaps, of the alternative methods of construction, the open canal is the cheapest. However, it is also obvious that an open waterway presents more hazards from the point of view of the national security than either tunnels or covered canals.

Disadvantage of Open Waterway

Our group of five companies has urged the construction of multiple tunnels so that the waterways could be protected some 150 feet below the surface and, in addition, in the event of a bombing attack at Niagara Falls, our eggs would not all be in one basket. Niagara Falls is a highly concentrated defense area in which are located large segments of the nation's electrochemical and electrometallurgical industries. When the District Engineer's report was filed, we objected most strenuously in a memorandum on file with the Board of Engineers for Rivers and Harbors. We took violent issue with the Army representatives' plan for an open waterway, from the point of view of efficient and economic engineering as well as from the point of view of our national security. In our memorandum we concluded: "In view of the immense importance of the electrochemical and electrometallurgical industries to the national defense, the serious impact upon the national welfare that would result from the disruption of electric service to those industries, the dangers to interruption of electric power service incident to an open canal, it seems patent that the proposal to construct an open canal of the nature described in the report should be rejected for security reasons alone."

In addition, public power advocates ignore the fact that under the Federal Power Act, as well as under the provisions of the Capehart-Miller Bill, the plan of development would have to be licensed by the Federal Power Commission. Before such a license could be issued, the Commission would have to find that the construction plans were in the public interest.

After thus stating inaccurately the position of the private companies with respect to the manner of construction, sponsors of the Lehman-Roosevelt Bill go on to attribute to us a motive for that position. It is asserted that we would desire to minimize the cost to sacrifice security hazards, since our objective would be to build structures which would have a smaller cost, in order to insure the greatest financial return. This is a most reckless statement. It is the kind of recklessness in which a representative of private industry would not indulge. Anyone who has even a superficial knowledge of Federal regulation and regulation in the State of New York knows that our accounts are stated on the basis of original costs and our rates are so regulated. He also knows that unlike the typical industrial enterprise where smaller costs may permit larger profits, investors in the regulated electric company receive only a return on the capital which is actually invested in utility plant. Here again, you will observe that these arguments against private enterprise, malicious since they are utterly insupportable, could be applied to any power project in the endeavor to justify public ownership.

Preference Policy

Among the most vicious aspects of the Niagara controversy is the use made by public power sponsors of the so-called preference policy in the distribution of power from government-owned multiple-purpose projects. It is asserted that there must be government development at Niagara Falls in order to safeguard this policy. The policy is applicable to the distribution of power not needed in the operation of multiple-purpose projects. Thus, what has been a consequence of Federal development is now put forward as justification for it. Where the preference policy was created as a consequence of the construction by the government of the multiple-purpose project, it is now being employed as a reason and justification for the construction by the government of a single-purpose hydroelectric project. Here again, the argument for public development is applicable to any power project wherever located.

Let us analyze a little more closely the territory in which the preference clause would be applicable in the event of government development of Niagara Falls. In the State of New York there are a few scattered municipal plants, owning distribution systems serving little more than 1 per cent of the state's electric consumers. In the entire State of New York there are only six small REA cooperatives. They have in the aggregate some 4400 customers who consume less than one-tenth of 1 per cent of the power consumed in the state. Their power requirements could be met with as little as 3500 kilowatts of installed capacity. These, then, are the consumers for whom the taxpayers of the nation, under the Lehman-Roosevelt Bill, would be required to finance a government project which will cost $350,000,000 and produce some 1,250,000 kilowatts of power.

Absence of Preferred Customers

Nevertheless, we are told that it is essential to place the Federal government directly in the power business, to apply tax revenues derived from private enterprise to duplicate the transmission lines of private enterprise, and later, undoubtedly, to duplicate their steam plants in order to render dependable the full Niagara power potential. We are told that it is essential to subject private enterprise to this unfair and ultimately destructive competition to preserve the so-called "democratic safeguard" of the preference clause for the people. What people? If there is a relative absence of municipalities, public authorities, and REA cooperatives distributing electricity, if all of the homes and farms are now adequately served by private enterprise, then, we must ask, what people?

The facts and figures disclose the real implications of the preference clause when applied to the Niagara controversy. Of course, the relative absence of any people in the preferred categories might only be temporary. Motivated by the government's discrimination against the customers of taxpaying private utilities and in favor of the customers of municipal and other public utilities, more and more of the distribution systems will become publicly owned. As found by the National Association of Railroad and Utility Commissioners, "Such preferences have been and are being used to foster and expand public power projects to the detriment of the customers of regulated utilities." Those private electric systems which would not be taken over by public authorities could not survive for long the competition to which they would be subjected by the Federal government's offer of tax-free, subsidized power for the asking. The advancement of the preference policy as justification for a government power project in the State of New York indicates most clearly the far-reaching implications and the seriousness of the threat of the Niagara controversy to the nation's privately owned, taxpaying electric companies.

Other arguments of public power sponsors merit only very brief mention. Recently, a sponsor of the Lehman-Roosevelt Bill, apparently hard-pressed for the logic of his position, was quoted in the press as saying, "Private utility interests may feel if they can get the Niagara project out of public control, they can also get their hands on the TVA, Bonneville, and Grand Coulee." The statement is too ridiculous to refute. I want only to point out that the Niagara project has never been in "public control." The existing Niagara development, which found its origin some 60 years ago, was pioneered, constructed, and has been operated with private capital and by private enterprise. The Niagara controversy involves only the expansion of that development which private enterprise has always been ready, willing, and able to undertake but which only now has become possible.

It is also asserted that private enterprise at Niagara would pay inadequate attention, in the distribution of the power, to the needs of the defense program. Not only does the record of our industry refute that assertion, but the Capehart-Miller Bill itself requires that "In contracting for the disposition of project power, preference shall be given to directions from the Department of Defense for supplying power to governmental installations or to industries requiring power to produce materials essential to the national security."

Public power sponsors further assert that only the Federal government could equitably apportion the Federal power among states within economic transmission distance, but here again specific provision and procedure for accomplishing that result under the aegis of the Federal Power Commission is set up in the Capehart-Miller Bill.

All of these arguments, in addition to their obvious lack of merit, could be addressed to other territories as a justification for public power there. Before concluding, I want to make mention of the one argument of the public power advocates which can fairly be said to be peculiar to the situation at Niagara Falls, and that is the necessity for preserving the scenic spectacle.

Sponsors of the Lehman-Roosevelt Bill undertake to find special circumstances at Niagara Falls in the obligations under the treaty with Canada to preserve at all times the scenic beauty of Niagara Falls. Under the treaty, an International Joint Commission supervises the construction of any necessary remedial works. The Bureau of Power of the Federal Power Commission, in 1949, estimated the cost of such construction at some $2,000,000, which is to be divided equally between the United States and Canada. Assuming, as must be the case, that the rise in price levels has increased this cost, the result falls far short of justifying the launching of the government into a power project which would cost in excess of $350,000,000. Our group of companies has indicated a willingness to absorb the cost of any such necessary remedial works.

Supervision by Joint Commission

Public power sponsors also assert that the International Joint Commission would have no jurisdiction over the private companies. But the fact is, as provided in the treaty itself, whether the Niagara redevelopment be constructed by the government or by private industry, the actual construction required to preserve the scenic spectacle at the Falls must be done under the supervision of the International Joint Commission. Since the Army Engineers as well as private enterprise engage contractors for their construction work, there will be the same degree of delegation, under supervision of the International Joint Commission, whether or not the public power sponsors have their way.

For these many reasons, to each of which I have referred briefly, it is apparent that the implications of the Niagara controversy are most far-reaching. The result can well be decisive in the long struggle which we have been compelled to wage in the last two decades to repel bureaucracy's encroachment upon the electric industry. For the same

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Managing to Have Good Management

By Lawrence A. Appley

President, American Management Association, Inc.

An address before the Twentieth Annual Convention of the Edison Electric Institute, Cleveland, Ohio, June 3, 1952

IT has been my privilege over the last quarter of a century to be active in and to have close contacts with many different kinds of managements in all types of business and industry throughout the United States and in some 20-odd different countries of the world. Regardless of where one goes, he runs into a common reaction which is expressed something like this: "Our type of business is different from any other. This part of the country is different. The kinds of people and markets with which we deal are different. Our problems and the conditions under which we have to operate are unlike those of any other business or industry."

I would be less than frank if I did not say that this kind of reaction does not stand up. There is no question but what there are differences in products and services. There are differences in methods and differences in degree of effectiveness, but basically the problems and needs of management are the same wherever you find them.

Basic Principles, Skills, and Tools

There are basic principles, skills, and tools of management which are common to any kind of management and to any geographical location. This is true within a company as well as between companies. You find, however, this reaction of "difference" within companies. Company divisions or subsidiaries on the Pacific Coast claim to be quite unique as compared with those in the Middle West or the East, and when you get to the Pacific Coast, there are those in Northern California who claim that they are quite unique compared with Southern California, as well as with Portland and Seattle.

It would seem that this should be one of the great lessons of World War II. Managements were operating in types of businesses they had never dreamed of being in and in areas about which they knew nothing, and yet they were successful. Automobile companies manufactured airplanes and tanks; refrigeration companies manufactured machine guns; soft drink concerns loaded ammunition bags, etc., etc. There are no basic differences.

LAWRENCE A. APPLEY

Well acquainted as I am with many managements and management people in the electric industry, I am not in a position to determine for that industry what its management needs are. Because the industry as a whole is made up of hundreds of companies, both large and small and running the whole gamut from poor operation to excellent and up-to-date direction, it would be virtually impossible for anyone to make an accurate analysis of the needs that exist in the industry, and it certainly would be most unfortunate to generalize.

The best approach, however, might be to present a few illustrations from electric companies with which I am acquainted and then to present to the entire industry some fundamental questions which these cases suggest. They will be questions which the individual management of any electric company should answer in an effort to determine its own needs for greater management development.

During 1951, one company that comes to mind increased its kilowatthour sales of electricity by more than 20 per cent over 1950. Nearly 30 million dollars of new property and plant were added to the system. Twenty-two thousand new customers were acquired. A new safety record was set. There was improvement in the construction and design of facilities and equipment. New records in the efficiency of power generation were established. Through conscious improvement in cost analysis, work simplification, and mechanization, this company assured its customers continued quality service at low cost. It definitely established itself in the mind of the community, the employees, and the industry as a progressive, well-managed concern.

Let me quote a few sentences from the president of another electric company: "You have often heard me speak of our competition both from government and from other business. We constantly have to ask ourselves, 'What can we as a company accomplish better than government or some other competitor?' The only real reason our company can justify its existence is because, over the long haul, we can render better service at a lower cost. Unless we can render better service cheaper than our competition, we won't survive and what's more, we don't deserve to."

Ways to Meet Competition

The management of a third well-operated electric company makes this statement: "There are only two basic ways to meet competition. One is to improve our service; the second is to cut our costs. We must continually use both these basic weapons. It is a matter of doing the common things uncommonly well. This may not seem very glamorous, but it enables us to render better service cheaper."

Another illustration just recently came to my attention. The particular company to which I refer started wage negotiations in April of this year. During these negotiations, the management arrived at an agreement with the union which recognizes in writing "that the primary objective of the company is to provide better service to its customers at the lowest cost consistent with its obligation

to provide fair wages and working conditions for employees and a fair return to its investors." This agreement goes on to spell out the intention of both union and management to work constructively together toward the attainment of sound results in the interest of all the public involved.

Several cases have come to my attention of electric companies that are having difficulty in attracting and holding good management people. While the main reason for men being attracted to, and remaining in, management positions in a company is not compensation, it is a vital factor. There is a minimum of income below which men cannot maintain self-respect in their jobs. Because of their positions, they must maintain a certain standard of living.

Regardless of where compensation ranks in relation to the many rewards of executive work, one cannot have good management without paying for it. There is one particular utility company that comes to mind where this is an extremely serious problem. An unusually high number of experienced, key executives are restless and seeking employment elsewhere, and a good number of them have already succeeded in finding it.

The Edison Electric Institute itself (which means its members) recognizes that there are differences in the competency of management within the electric industry. I understand that each year you present the Coffin Award to companies which, in the opinion of the Institute, have done outstanding jobs in particular areas of management. In other words, there is good management and bad management in any industry, and I am glad to recognize that this particular industry has its fair share of fine management. May I now turn your attention to some fundamental questions which these cases force all people in the management of an electric business to face fairly and squarely. At least, they should be thought-provoking.

1. *Does the management accept a philosophy that there is just as much incentive for growth and progress in the electric industry as there is in any other form of commerce and industry in America, or is it a victim of the belief that a government-regulated industry is of necessity a retarded industry?*

Even though rates are controlled and these controls vary by states, in most cases, the rate is arrived at as a percentage of a base which is usually capital investment. This means that by increasing the quality of the service rendered, you increase demand for the service, you increase the capital investment because of added facilities needed by that demand, and you receive the capital for such investment as a result of the confidence of the investing public in the management. By this means, you increase volume and by increasing volume, you increase profit. All this means is that it takes a pretty competent management to do these things, and the more competent the management, the more satisfactory is the result. If this kind of philosophy exists in your management, then it is apparent to you why there is a need to manage so that you have good management.

2. *Is the management of the company leaning toward the European economic philosophy, or is it dedicated to and a believer in the American approach?*

The average European business executive believes that the only way to increase his profit is to go to the government authorities and secure a price increase. The American philosophy is that by increasing the quality of product and reducing the cost to the consumer, you increase the demand, the market, the volume, and thereby increase your profit.

There is a great deal of difference between these two as to the need for competent management. The common European variety requires negotiators. The American variety requires business executives. If your company believes in the American approach (despite the fact that it is government-regulated), then there is no question about your belief in the need for managing to have good management.

3. *Does the management realize that we are approaching the greatest competitive economy this nation has ever known?*

There are some who are talking about "the coming depression." There are those who seem to have thought this through fairly well, however, who describe it better as a return to hard, tough, rugged competition with success at a premium and with a high rate of business failures. Some people like to call this the normal and healthy condition in American business and industry.

A large percentage of men in positions of management responsibility today have never operated in a competitive economy. We haven't had such an economy in this country for nearly 14 years. If there were no other reason for paying a lot of attention to the competency of our managements, these competitive conditions in themselves should be sufficient to call for all of the effort we can put forth to prepare men adequately for what they will be up against.

4. *What is the competition in the electric business?*

For one, there is gas, and those of you who are directly competing with the gas utilities know it is sharp and rugged competition. Those of you who are fortunate (or unfortunate) enough to be in both the electric and gas utility business have the same competitor, and an extremely rugged one—government operation.

Competition with government operation will not be determined on the basis of competitive rates and costs. The government figures never will be compared honestly and fairly with those of private utilities. That competition will be settled purely on the basis of public faith and confidence in the competency of private management. So long as the management of a private utility is doing a job acceptable to the public, then the government loses its appeal. Even though government operation may be known to be less competent, the public turns to it as an alternative to incompetency when it exists in private industry. That management that is conscious of this situation well knows the need for managing to have good management.

5. *Is the management of the company fully conscious of the unlimited market for electric companies and of the strategic part that managerial competence plays in the capture of that market?*

It is difficult to conceive how anybody in the electric business can fail to comprehend the unexpected developments every year that increase the market for electric power and, therefore, require attention to the importance of developing management that can take advantage of these new opportunities. The job of the electric company executive is to create markets. There is absolutely no limit to residential, commercial, and industrial electric power needs.

Television has been increasing in leaps and bounds, and it is a product for poor, middle-class, and wealthy. The electric clothes dryer is a recent development. Its power consumption is that of the electric stove. It has proved to be one of the greatest middle-class appliances that there is today.

The lighting in practically every

home, office, and factory is inadequate. People are physically suffering because of nothing but ignorance. With the many years that we have had electric lighting facilities, we are not yet using anywhere near the requirements for just plain good health.

The substitute for men is electric power. If labor costs go higher, machines increase in number. If machines increase in number, productivity increases, man's needs are met with less effort, and the standard of living of all increases.

All of these illustrations are listed simply to enforce upon our consciousness the fact that the potential for volume in the electric company market is far beyond the concept of any human being, and there never could be a management in the electric company business competent enough to tap it all. Those managements that are conscious of this are fully aware of the value of concerted and continuing effort to have good management. The electric company business is a volume business. The volume is available if we have the people who can get it.

6. *Is the management of the company cost conscious, or is there an inclination to be a bit careless about this because of the cost-plus aspects of rates determined under government regulation?*

Do not be too quick to answer this. It is extremely important. Regardless of what the rate base may be, the profit of an electric company can be increased with volume. The lower we can keep our costs, the lower we can keep our prices, and greater consumption will result therefrom, as well as greater satisfaction by the consuming public. Don't forget it is the satisfaction of the consuming public that licks that tough competitor, government operation.

Keeping costs down is directly related to the competency of management. How well informed is the management on methods and efficiency? How competent is it in its supervision? How able is it in building a tight, taut, efficient organization that can produce services and products at less unit cost despite constantly rising costs of the ingredients? The essentials for operating an electric company today are 90 per cent more than they were in 1941.

If you are able to answer this question in the affirmative, then you know what we mean when we say that you don't get this by hit-or-miss, day-in-and-day-out management. You get it only by having a competent management, which you have only by managing to have it.

7. *Are the management people adequately compensated?*

This is a basic question that more managements are asking themselves today than ever before. While material reward is still not the greatest for which management people strive, it is extremely important. It has been fairly well established that as executive incentive is reduced, so is executive performance. If the experiment in England during the last four or five years has not proved this, what has it proved?

The tax situation in this country already has cut seriously into executive incentive, and we aren't too far from being down the road as far as England has gone. It is extremely dangerous. Numerous studies are being made constantly by individual companies and by industries as to how the compensation of their executives may keep up with inflation and taxes.

We have in the American Management Association an Executive Compensation Service which is the most extensive study of its kind. It not only analyzes the actual compensation of the key executives in hundreds of companies and by industries, but it also makes available to managements various modern methods of executive job evaluation, incentives, and compensation which help managements to keep on top of this problem.

It has also been my privilege to see one or two surveys which have been made, particularly in the electric industry. If any electric company management is not studying such surveys as these, it might be well to do so. This is a problem with which we cannot procrastinate in any business or industry.

This has been rather a long and searching analysis, but I don't know of any other way to approach an important problem of this kind without determining the need, and I don't know how to determine the need without facing fundamental issues. All I have tried to do is to suggest questions that each individual management can ask itself to determine the extent of its own needs in relation to increasing the competency of its management organization.

Suppose, after you have answered these questions, you feel you are not doing enough to have the kind of management you would like to have? On the other hand, possibly you would like some suggestions against which you can check what you are now doing in order to help in determining its adequacy. With this in mind, may I suggest some things that managements might do in order that they may manage to have good management.

First, let us consider what management is. Management is an activity in itself unlike any other activity. It requires particular qualifications and preparation. It is the responsibility for getting things done through the efforts of other people.

Good or sound management is that which is continually increasing its competency to do the management job. It understands the true nature and responsibilities of management; carefully and consciously selects and develops members of the management team in line with required qualifications and preparation; is guided in its actions by the firm belief that the product and services it offers are means whereby the company's employees may render a genuine service to society with deep personal satisfactions. It is a management which makes continuing profits over a long period of time.

"Profit" Becomes an Epithet

Something akin to righteous indignation rises within me when I hear it assumed that profit is undesirable, that the making of it is sinful, and that the fact that some individual can operate more profitably than another automatically establishes him as a crook. In the public mind, profit has tended to become a term of opprobrium, ranking high in the dictionary of epithets employed by the demagogue and the radical; a profitable corporation is considered by some to be an organization that follows undesirable practices.

But the mere fact that Hitler used Wagnerian music to symbolize the "esthetic" side of the New Order is no reason why we should consign to the scrap heap some of the foremost works of musical literature. If a symbol has been abused, we must learn to look beyond it, to the abuse itself.

So it is with profit. The freedom to make profit implies also the freedom to make it unfairly or to make it on products and services which, by many standards, are undesirable. This is inherent in the nature of freedom. With the freedom to do right, there must coexist the freedom to do wrong. Society,

however, has a slow, certain way of dealing with those who are dishonest, ruthless, unfair, and who dispense what society considers harmful. While it must be recognized that profits have at times been made in the past by exploitation and by anything but fair and acceptable management, the fact is that we are approaching the end of that era.

If a company receives more for the goods and services which it produces and distributes than it disburses for the products and services which it purchases, then that company is said to make a profit. If it continues to make such a profit over a long period of time, it may generally be inferred that society has placed the stamp of approval on the quality and methods of its products and services, and as a corollary that the management of that company is sound and capable.

When the term "profit" is used to mean the real value of the services rendered to others over and above the value of the services received from others, the basic and major purpose of management is to make profit. The over-all profit made by a company is merely the sum total of the individual efforts of its many employees. The greater the number of individuals in the organization who produce more than they consume, the greater the profit of the company and of the individual employees themselves. Thus, the fundamental job of management is to increase the value of the contribution of each member of the organization, i.e., to increase their productivity.

Raising Productivity

We have learned that productivity can be raised most effectively and most consistently when the methods used inspire the will and the desire to work and when the rewards are shared with all who contribute to the over-all objective. In other words, the time has arrived or is very close at hand when the management which hopes to operate at a profit will do so only by employing those methods which inspire each and every worker to do his part.

Management that is competent, management that is continually increasing its competency in line with the growing requirements and complexities of the executive job, management that is providing an adequate reserve of qualified and trained successors, does not just happen. An organization has to manage its affairs in such a way that specific provision is made, plans and programs established, so that the kind of management situation which we are discussing exists. Such a management can be planned, and it can be reasonably well assured with conscious and continuous effort. It can, however, no longer be left to chance.

Here are measures which a management can take which will certainly contribute to increasing the effectiveness of present management, to preparing management people for the assumption of greater responsibility, and to developing potential managers for their first supervisory obligations.

Measures to Increase Effectiveness

1. Reduce to writing a clear-cut, comprehensive statement of why the company is in business, what its purpose is. In arriving at this statement of company purpose, clarification of the basic business philosophy of the institution is inevitable. It is obviously difficult for any group of people to formulate a written statement of purpose, which is to become an open document, without arriving at a relatively high purpose.

2. Reduce to writing an official company statement of the nature of management and its responsibilities, and include in this the recognition that management is a specific activity requiring certain basic attitudes, qualifications, and preparation.

To some, it may seem strange that this is a requirement. They may assume that this is recognized throughout the company without putting it into writing. That, however, is seldom the case. If a management really has as a basic policy the belief that management requires certain qualifications and certain preparation, then that makes it perfectly clear that the time and the means for identifying these qualifications, on the part of the individuals, and for providing the preparation that is needed, must be made available.

Taking a careful inventory of the qualifications, needs, and compensation of present and potential executives takes considerable time and effort. The correct answers cannot be arrived at in incidental conversations. It is rather significant that the appraisal of an individual as to his competency to fill a certain position is quite different when the position is open than when it is not. Further than that, the education and training of management means, to some extent, time away from the job. If time so invested does not bring a greater return as a result, then the media used should be questioned.

If it is perfectly clear throughout all levels of a management team that adequate qualifications and preparation are required, then a lot of the present reticence on the part of some to do what is necessary would be reduced.

3. Establish a current and effective means for appraising the caliber of overall management, of individual members of the management team, and of potential managers. There are many systems of executive appraisal and inventory being used today. They vary greatly in their effectiveness. Before any management adopts an approach to this problem of formal appraisal, a very careful study should be made as to how best it should be done. There is no one system which meets the needs of all companies. They should study those that are available and then tailor-make their own system.

There are very successful programs of executive appraisal in some electric companies. They have been in operation long enough to have been reasonably well established as successful. There is adequate evidence of their effectiveness and benefits. I regret that time does not permit detailing one or two of them, but they are available to those who indicate an interest to know more about them.

Management Development Program

4. Put into effect a management development program, which is clearly spelled out in all the details of objective, procedure, and responsibility, which will develop the kind of management climate in which good management and competent managers can flourish; carefully select, educate, and train prospective managers; develop present managers for better performance in their current jobs and for the assumption of greater responsibilities; provide adequate executive incentive and compensation.

Here again is a very broad subject about which there is much to be known. Programs of management development are not a recent innovation in American business and industry, but interest in them and adoption of such programs has spread with an intensity unequaled by any other management activity since World War II.

There is a wealth of experience and knowledge available in the field of man-

agement development. There are also adequate means for discovering what this experience and knowledge is. There are people in many companies who are devoting their full time to this activity and who are free and willing to make their experience available to others.

American management is literally going back to school. A year ago, it was my privilege to complete a study on management education for presentation at the Ninth International Management Congress in Brussels, Belgium. The work being done in this area by our universities and colleges, by the companies themselves, by professional associations, and by management consultants is nothing short of phenomenal. It is impossible for anyone engaged in this activity to keep up with the demands for help from American management.

There is a continually increasing number of executives being appointed full-time to this work within their own companies. They are constantly increasing their own knowledge and expertness. They are exchanging experience openly and freely. If you do not know what you need to know about what is going on in this kind of work, that too is available upon request.

Keeping Informed

5. Become well acquainted with, and make full use of, all the means, both within and outside the company, for broadening the viewpoints of the management team, for helping executives acquire an awareness of the local, national, and international forces that are influencing their decisions and activities; for acquiring the skills of management; and for developing competence in the use of the tools of management.

Every time it is my privilege to meet with a group of top executives for the purpose of discussing what they consider to be the greatest needs of their management people, there seems to be unanimity that a greater awareness of what is going on about us is necessary. We become so involved in our own jobs within our own company that we do not see what is going on about us. It is absolutely necessary that conscious effort is made to do those things which keep executive people well informed over and beyond their own particular jobs, companies, and communities.

6. Set up formal and continuing research projects in management attitudes and techniques and in specific fields of human relations. In doing so, establish a favorable ratio of expenditures to the funds expended for other types of research.

If it were possible to determine the total amount of money spent annually for product research and development and that which is spent for human research and development, it is quite possible we all would be rather shocked. We would be particularly concerned if we fully realized the far greater potential return for dollars spent in finding out what motivates people and how they can be influenced to put forth their greatest effort in organizations such as business and industry. We haven't begun to tap the creativeness and productiveness of human, mental, and physical effort. It seems incredible that any company can consider its future as safe when it does not put a proper amount of time and money into human research.

In this presentation, it has been my attempt to point out that management is an activity in itself and that competence in it requires certain qualifications and preparation; that competent management which can meet the competitive and unlimited markets ahead will not just happen; that it is possible to have skilled management and adequate management reserves in an electric industry or, for that matter, in any other industry by the adoption of certain basic policies and programs.

It has further been my effort, by the presentation of certain fundamental questions, to help determine the need for any specific effort on our part to do anything about the caliber of the management team. If this presentation has done nothing more than to inspire further inquiry and interest, then it has attained its purpose. It certainly has not been my intention to supply all the answers. Actually, that is beyond the competency of any human being, but there is much room for valuable research in this kind of endeavor.

The Far-Reaching Implications of the Niagara Controversy

(*Continued from page* 231)

reasons, the result of the Niagara controversy can well be a decisive blow to the private enterprise system as typified by the electric light and power industry.

Notwithstanding the seriousness of the issues presented by the Niagara controversy, the situation is not without its sunny side. Thus far, the response of those who place their faith and hope in the continuance of the private enterprise system has been tremendous. From all over the nation, civic groups and industrial, farm, and labor organizations, as well as countless individuals, have rallied to our cause. In New York State itself, although the supporters of the Lehman-Roosevelt Bill claim to be acting in accordance with the desire of the people of the State of New York, we are receiving publicly the support of the Chamber of Commerce, the Farm Bureau Federation, the State Grange, the Citizens Public Expenditure Survey (which is the state taxpayers' association), the State Federation of Labor, the State Association of Electrical Workers, the International Brotherhood of Electrical Workers (AFL), the Utility Workers Union of America, (CIO), various engineering societies, the Society of Professional Engineers of New York State, various women's clubs, as well as the Minute Women of America. The editorial support for private development has included national as well as local publications. With such support, and it is increasing daily as the facts become known, we have every right to be hopeful of the outcome of the Niagara controversy.

On behalf of our group of five companies, I want to express our deep appreciation for the electric industry's support. It is most encouraging to know that we can look forward to the wholehearted cooperation of the industry in the decisive days ahead of us.

In closing, I want to say that as an industry I am sure we will continue to shoulder the serious responsibilities which will continue to confront us in a troubled nation and in a troubled world. I am sure we all agree that no sacrifice will be too great except the loss of our freedom. We shall lose our freedom if we lose the private enterprise system. We shall lose the private enterprise system if we do not succeed in halting Federal encroachment upon private industry.

This Business of Government

By The Hon. Wallace F. Bennett
United States Senator from Utah

An address before the Twentieth Annual Convention of the Edison Electric Institute, Cleveland, Ohio, June 3, 1952

I AM having a unique experience. I am a man who, after 30 years in an atmosphere of and career in business, suddenly finds himself a part of the government. I brought to my new job an attitude that I am sure many people share toward the government. Like these people, I was inclined to observe that the Federal government was the biggest business in the world; that we needed more businessmen in government; that if we tried to run our businesses the way the Federal government is run, they would soon fold up.

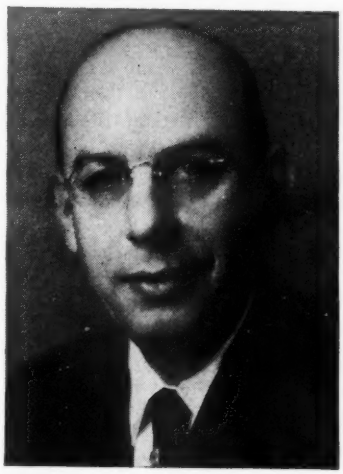
Thus, I have chosen to report here some of my observations on this interesting question of the relationship between business and government and the problems created by that relationship.

From the point of view of both business and government, I think it is fair to say that, at this point in American history, there is a definite atmosphere of conflict between these two great forces in our American life. In some ways, that is inevitable; in many ways, it is unfortunate. I think it is important that we spend a little time trying to find out why this should be and then spend a little more time talking about what should or can be done about it.

A Difference in Atmosphere

The first thing that impressed me when I came out of business and went into government was that government provides a completely different atmosphere. It has a different vocabulary. The words that are common to these two parts of our society have different meanings. When these words are used in their separate atmospheres, it is difficult for business and government to find common ground on which to discuss common problems.

The second thing, of which I have had constantly to remind myself, is that there are no such things as "business" or "government" abstractions. There are only men, men who serve in one phase of our life or the other. When I made that discovery, it became easier for me to understand what was going on. I realized that these men are moved by the same motives and that they are plagued by the same weaknesses. If they are honest and honorable and men of integrity and good intention, they are looking forward to the same objective. But with the best goodwill in the world, they get involved in the differences of the situations in which they work, and they help contribute to conflicts.



THE HON. WALLACE F. BENNETT

It has been interesting to me to observe that occasionally businessmen do go into government. After a while, a few months or a few years, those who knew them back home when they were in business are inclined to say that these businessmen in government have changed, that they have caught "Potomac fever." The forces of the government have been too powerful for them. I don't think that that is always altogether fair, because you have to change in order to meet the situation in which you work.

Question of Bigness and Growth

I would like to suggest three examples to point out the problem as I see it. I have suggested that men are moved by the same motives. I think that there are no more fundamental motives in human life than the desire to grow, to develop, to build, to achieve, to be rewarded, and these motives move men in business, as they move men in industry. When we are reasonably successful in either sphere, the organizations with which we work begin to grow. They get bigger. That is the measure of our success.

One of the interesting conflicts between government and business today arises over this question of bigness and growth. The government says, "Business is too big. It has to be curbed and constrained, and we are the boys to do it." And business says, "Government is too big. It is getting out of hand. It is threatening the liberties of our people. Something must be done about it." And, yet, both of these conditions, happening side by side, are the result of the most normal human motive, the desire to grow and build.

Let us stop a minute and look at these two situations. Government says, "Business is too big. We can't have the power that goes with economic situations left in the hands of selfish men whose chief motive is to make a profit, whose motivations are economic." For men in government, power is the only reward, because government as a career doesn't provide financial rewards commensurate with those that can be earned in business by men of the same ability, but it does provide the satisfaction that goes with power.

Fetish for Little Business

Then government says, "Moved by the desire for profit, business, when it gets too big, makes too much profit. And when that becomes accumulated into a few hands, it robs us in the government of the power adequately to serve the voters, the consumers, the citizens of the United States. It interferes with our income, and so we have to stop that."

There has grown up in government an interesting situation. There has developed a fetish for little business. Big business is evil, and little business is virtuous. It is interesting to me to sit in the Senate and see that the men who led the fight against business as a whole are the ones who worship at the shrine

of little business as a virtuous check and competitor of evil big business.

Well, let's turn the page over. "Government is too big," say the businessmen. "It has too much power. It is collecting too much of the national income and spending it. It is accumulating. It has grown until it is the largest employer in the world. It has too much influence over the lives of people. It interferes with ordinary economic process, because it has become so big." We criticize government as business. We say, "It is wasteful." We say, "It is extravagant." We say, "It takes too big a bite out of the national economy for taxes."

Arguments for Big Government

But, in defense, government says, "Our purpose is to serve the individual citizen, and we see the individual citizen fundamentally as a consumer, a man with wants and needs. And we can't get too big to serve him. He has still too many wants and needs that are unsatisfied. You say the government is wasteful. Well, what of it? What we waste, actually, increases and hastens the process of consumption. You say the government is extravagant. Government can't be extravagant, because its resources are limited to the resources of all the people, and as long as there are unmet needs, it is government's obligation to take those resources and attempt to meet those needs.

"You say taxes are too high. Well, taxes may be a burden to the businessman and to some citizens, particularly the big ones who have become too big, but taxes are very efficient and desirable in the hands of government. They not only pay our bills but they give us an instrument by which we can reshape the pattern of life in this country more nearly to our conception of what the majority of the voters want.

"Our final reward is not in dollars or in profit. It is in votes, and the test of our success is that we be returned to office and entrusted with more power." That is the point of view of the elected officer.

We like to talk, in business, about bureaucracy and how bad it is, sometimes forgetting that there is bureaucracy in business. It is a disease that can fasten itself onto any organization that requires large numbers of people to operate it. A man who builds a business attempts to serve his customers so successfully that they will pay him enough so that he can expand his service and thus expand his income. We like to say, we businessmen, that we operate in the public interest and that our success is a measure of our ability to meet the public interest.

Now, look at the fellow who is a government department head or bureau chief. He feels that his service is in the public interest. He can't go out and sell it to a customer for money, but he has to sell it to Congress and to taxpayers in the hope of getting a larger share of an appropriation. And many of these men—probably most of them—feel that the service they render is so valuable that citizens, if they were wise, would willingly increase their tax burden in order that this service might be increased.

We like to laugh at the bureaucrats and say that bureaucracy is a process which grows by accretion and puts a premium upon the building of mere situations. Sometimes, this can be said about businessmen.

So, as this very human desire for growth operates in two fields, it produces conflict, produces distortion, misunderstandings, difficulties. We have finally come to the point in the United States where it has created competition, and, therefore, the conflict is a very real and practical thing and not a matter of theory.

I have suggested that men in government and business share the same weaknesses. Briefly, I would like to deal with the problem of inflation in order to illustrate my point.

Causes and Cures for Inflation

Men in business and government will agree that inflation is bad, but they won't agree on practically anything else about it. Men in government say, "Inflation is bad. It is bad because it reduces the consumer's purchasing power, makes it more difficult for him to satisfy his wants. Inflation is caused by business. Inflation is caused by high prices, and businessmen make high prices, and, therefore, cause inflation."

And how do you cure it? Government says that is easy. You just put a weight on prices and hold them down. Then you move to increase the purchasing power of the individual by wage raises or some other means, and you restore the imbalance, which should always have purchasing power a little higher than prices. That is how you cure inflation."

The business people don't accept this at all. They say, "Inflation is caused by government. It is a phenomenon of the manipulation of the government's power to coin money, and inflation is 20 years old in America. It began as a deliberate program to cure the results of the depression and has continued ever since."

In contrast, government says that inflation is a short phenomenon, and that we have only had two spots of it in this generation, one right after World War II, when business got greedy after price controls were taken off, and once since Korea started, when business attempted to exploit the possible needs of the people.

The business people say not only that the government created inflation as a matter of deliberate policy by its manipulation of money and credit but also that government alone can cure it. Government can cure it by reducing its size, by taking part of the tax burden off, by cutting off deficit spending, by applying indirect controls to credit, and by drying up or at least postponing this excessive zeal of the consumer to consume.

Increasing Production

Business men say inflation can be cured in part, at least, not by increasing consumption, as the government says, but by increasing production. Businessmen say that price controls should be taken off, or we will never be able to cure inflation. The facts probably lie either somewhere in between or represent a combination of the views of government and business.

A major test on a motion to strike out price and wage controls was conducted in the Senate last May 28. I voted for it, but it was defeated, as I knew it would be. Last year it got about five votes, and this year it got about 18. It might be interesting to review the reactions of some of the businessmen who are in Congress, and there are some, before the vote was taken. I inquired of some of my friends as to how they were going to vote, and I was surprised to be told by some particular men, "We can't afford to take controls off now." They gave two reasons. First, it is politically dangerous. The government, the administration, can still create more inflation and beat us at the polls in November. But, they also said, "We can't trust the businessmen of America. If we take controls off, they will move to create inflation."

So, it seems that even men who have come out of business into the government have come to accept the philosophy

that businessmen, not government, create inflation.

Let us move into another area of interesting conflict that grows out of the fact that both government and business, in the end, exist in a free nation to serve the best interests of the citizen. Men on both sides have come to feel that their pattern, their program, is the most successful and the most efficient. There is a proposed Constitutional Amendment floating around the country —it has not been introduced in Congress, as far as I know—which provides that government must immediately withdraw from all activities which are in conflict or which are substitutes for services that can be provided by private business. That is one extreme.

We see the other extreme in Russia, where there is no place for private business and the right to serve the people is vested solely and completely in the government.

Are you ready to take either complete pole? Are you ready to say that government may render no service to business for a price or profit? I am sure you are not ready to say that business has no right to serve the people, and I think you are not ready for either position. The ultimate solution to that problem is not one of interdiction but one of continuing adjustment. Are you ready to say, for instance, that the Federal government should turn the post office service over to private business? I was interested to see that Admiral Moreell of Jones & Laughlin Steel Co. made a speech and said he was ready to do that, but he is the only man I know to be of that opinion.

Difficult to Draw the Line

Are you ready to say that we shouldn't have municipal water plants and that other municipal services for which fees are charged should be discontinued and set up on a private basis? You probably are not, but you are disturbed when government says we should extend the idea of municipal power plants, and so am I. It is hard to know where to draw the line, and that is our continuing problem.

As to the relationship between business and industry in the utility field, it seems to me that the problem is made more difficult by two conditions, which we cannot escape. The first is that there may be areas, there may be situations, there may be valuable developments, which on the face of them seem to be so vast, with the hope of reward so slim, that private capital cannot be induced to take them up. Where does the businessman come in in the government's stand on that kind of problem?

To be specific, in my own state, we have such a problem. Ours is a semi-arid state, and water is our life. We have just about reached the limit of our development in drought, both populationwise and industrially, unless we can get more water. We have a source of water under a compact that was signed 30 years ago and which divided the waters of the Colorado River. We are entitled to a certain amount, but to get it will require an investment now estimated at one billion three hundred million dollars.

Irrigation in Utah

I think the people of Utah are primarily interested in water, because they know that power can be produced from the state's vast coal fields, as it is being produced by Utah Power & Light Co. and other sources. But they also know that they cannot finance irrigation facilities, using water from the Colorado, unless there is a power development to take over a majority of the load. I don't know whether or not there is any private capital that would undertake to go in and build that system of dams, the power part of the project, and the aqueducts and the reservoirs that would have to be developed to supply the water where it can do us the necessary good.

As a businessman, should I say that I will not support the use of government funds in that kind of a situation, and, if there are no private funds, then say, that such development is desirable but that we shouldn't have it?

On the other hand, I think there have been areas in the electric industry where there were human wants which the industry did not choose to satisfy because of the cost involved, because it was obviously impossible to make such areas commercially successful, because they might have put a destructive drain on company operations. But government has stepped in; it has stepped in in both situations, the very large and the very small; and so the industry faces the REA's today.

Looking back, the industry might have done things differently. But there isn't any question but that, in this matter of the ultimate service that the citizen or the consumer wanted, there seemed to be situations in which the government was the more logical source of the solution.

There are a lot of other corollaries to this situation, and the electric industry is trying, today, to find the point which represents a reasonable, logical, profitable, desirable dividing line between the service of the government and the service of private industry.

These, then, represent three major problems: the problem that grows out of a common motive; the problem that grows out of a common weakness, inflation; and the problem that grows out of an inevitable, overlapping competition.

How are we going to solve them? Some people say, "Let's pass laws," but if you depend on that solution, you put yourself in the hands of government. It is government that passes the laws, and you can be sure that government will not pass laws which materially weaken itself and strengthen a force that it considers to be antagonistic.

"Well," you say, "let's elect more businessmen to government. Let's fill Congress up with men who are favorable to our point of view." That is a desirable thing, but, when a man gets into Congress and takes the oath, he suddenly realizes that if he is true to himself and his oath, he cannot represent a single segment or a single point of view. There are many who do, and we look on them with a kind of contempt. We measure them as the tools and not the servants of the people.

Solutions to Problem of Inflation

I think there are some things that we can do. First, in this question of inflation, I think there is a principle involved. Now, can we find the fundamental truth which is represented by that principle? Can we find the real cause of inflation? Can we find the logical steps that must be taken to solve it? Then, can we wash out political implications and self interest and apply the principle?

The sad fact is that we have liked inflation, up to a point. We have liked it and the sense of progress and increase and higher goals that it has given us. We like government business, for government is the biggest purchaser. It is going to take a lot of courage to say that we are going to cut this off and that off and that we are going to reduce the flood of government orders. It is going to take more courage than the American people have, I am sad to have to report.

I have been in the Senate now for a year and a half. I have seen a few attempts by government to carry out the edicts of Congress and reduce expenses, and some of these edicts affected communities, individuals, and industries in my native state. In a number of cases, such reductions have only affected one man or one service in a community, a few thousand dollars, but the reaction from the businessman and citizens of the state has been automatic. They object. They don't want this man cut off. They don't want to lose the salary of these three or four people who work in the service of their town, and all of the pressure in the world that they can bring to bear comes down on me to restore it.

We have a number of very large government installations in Utah. The Federal government is the largest employer in Utah, probably four or five times as big as the largest private employer. Can you imagine what would happen to me if I, as a Senator, said, "We will pick out one of these installations and eliminate it?" Knowing what has happened when I have seen a bureaucrat attempt to eliminate one employee, I can realize the weight of pressure that would be exerted against me if any cutback had a major effect on the income of the businesses of my community. And, yet, we are not going to be able to reduce the cost of government without firing somebody, without eliminating functions.

Since I have been in the Senate, only once has an organized group of people written in to me and said, "We are getting too much money from the Federal government. Here is a function you can eliminate. Here is an amount of money you can take out of the budget with our approval." The American Farm Bureau Federation made that suggestion last year, and it was defeated both in the House and in the Senate. The federation made it again this year, but it is not even being reported out by the appropriation committee. Why?

I voted for it, and when I asked some of my friends who didn't, they said, "Well, that is what the organization wants, but that isn't what the individual members want. The organization is not going to lose any money if we cut this function out. Dues are going to go on just the same, but it is going to take money out of the pockets of members, and the members won't stand for it."

We have a long way to go, if we are going to overcome this particular handicap, if we are going to be able to raise ourselves above what seems to be our selfish interest and permit our representatives to vote safely for the long-range common good.

We have to find principles, and then we have to have courage to apply them. When we talk about this question of bigness and realize that it is the product of common motive and when we realize that the difficulties we face are the products of weaknesses that exist both in men who work in government and men who work in industry, we realize that this is just another manifestation of the oldest problem in human life, the problem of the development of character and responsibility, the problem of overcoming selfishness, the problem that man faces in resisting temptation for an easy solution.

We have been very much worked up about corruption in government and men who have succumbed to temptation. Men in government remind us that there could not be any corruption in government unless there was a concurrent corruption in industry. And they remind us—or they give the impression—that there is much more, because in addition to the corruption in industry, which affects government, there are many questions, indicating selfishness, which affect only the operations within industry itself.

Living Together Harmoniously

Finally, I have indicated my idea of the only possible solution, which isn't really a solution but simply the development of an arrangement under which we can live together. It is a constant readjustment between business and government, each of which seeks to serve the citizen.

Is there a court of last resort? Is there a force to which conflicts can finally be referred? We are very conscious of a court of last resort, today, because of the recent Supreme Court decision in the steel case. And we are very encouraged to realize that in this particular conflict, there was a principle, there was a court, there were men with character and courage to apply the principle and let the consequences come as they would.

In our problem, however, the court of last resort is not the Supreme Court. It is the supreme sovereign, the individual citizen, and if we have a point of view which is more worthy than that of the men who make their living in government, we can assure its survival if we have the ability to provide the leadership that it is going to take to win the final judge, or citizen, to our way of thinking.

What is the proper relationship between government and industry? I think it lies somewhere between the two extremes of which I have been talking. Interestingly enough, in our kind of government, where the citizen is the final arbitrator, leadership outside the ranks of government itself can be effected. It can exist. It can operate. You in the electric industry have that opportunity of leadership, and therein lies, I think, your ultimate hope of solving the problem of government and industry. You work much closer to the people who make up your organization than any man in government does. You meet them more frequently, and you have a greater opportunity to teach them.

If government and business are ever to come into proper balance and maintain the kind of a relationship which permits each to operate effectively in its own sphere with a minimum of interference, it will be because men in industry, with positions of leadership, have the wisdom and vision to see the proper balance, develop and permit power in government where it is wise and necessary, and have the ability to win those with whom they work to that point of view.

Government and industry should not be opponents. They should be partners.

Wisconsin Company Wins Americanism Award

IN recognition of the company's public and employee information program, "which supports fundamental American ideals," the Wisconsin Power and Light Co. received the first annual Americanism Award of the Department of Wisconsin, American Legion, at a ceremony held in the Legion Club, Madison, on June 5. The award, in the form of a bronze plaque, was presented by Department Commander Kenneth L. Greenquist to J. E. Canfield, Vice President of the company.

In making the presentation, Commander Greenquist stated that "Tonight, in recognizing the work of Americanism as an outstanding service, we bring into focus the great need for more of this work."

On the Frontiers Where Industry and Education Meet

By Deane W. Malott
President, Cornell University

An address before the Twentieth Annual Convention of the Edison Electric Institute, Cleveland, Ohio, June 3, 1952

IN a very real sense, the problems of the men who are administering American colleges and universities are closely akin to those of men in the electric industry. The former are producing power through trained and educated young men and women; the latter are producing power through kilowatts. The production capacity of the electric iudustry comes to some 90 million kilowatts, I am told, including both public and industrial capacities. Colleges and universities have had in process during this academic year some 2,116,000 human beings. These institutions, too, have problems of procuring raw material, processing it over a period of several years, financing it, and finally disposing of it to a satisfied constituency. They are concerned, too, by their load factor. Line losses of the electric industry are measurable and of importance. Leaky human noggins cause much educational output, also, to be lost in process.

DEANE W. MALOTT

Inventory of Goods

Of course, there are some differences between the electric business and education. The electric companies' inventory of goods in process is really energy confined to wires and formal distribution channels. They sell energy which is dissipated and must be supplied anew. The inventory of educational institutions is on the hoof, running about with ideas of its own, self-charging, confined to no distribution pattern, capable of study in no network analyzer, and producing all sorts of strange and unexpected results, from dormitory riots in quest of coed lingerie to positive ideas concerning the due date of the millenium.

Electric output is intellectually inert; educational output has ideas on every known subject. Both are capable of producing considerable shock, but the fatalities induced by either of these operations are surprisingly small.

Electric companies can measure their produce in terms of uniform units; colleges and universities have no measure of theirs whatever. The companies' effort is to maintain a uniformity and constancy of output. Educational efforts go to the production of dissimilar units lacking uniformity in energy, productive capacity, and pulling power. Electricity output is taxed—and educational output is sure to be.

Men in these two professions suffer somewhat from the same vicissitudes in their executive responsibilities. The electric industry fears government production of power, with all of its concomitants of public bookkeeping which recognizes no complete cost accounting procedures, with all of its implications of socialization and the inhibition of the free-enterprise spirit.

Federal Financing of Education

Men in the field of education, too, fear the long shadow of the Federal government, casting its inexorable influence throughout their operations. Federal financing has been part and parcel of higher education since the Morrill Act of 1862. Then, for long decades, there was no particular change in the extent or proportion of government aid. Since World War II, however, there has been a great increase in Federal support for college structures. First, there were the military programs; then, with the war's aftermath, the G. I. training lifted the enrollments and swelled the coffers of every institution in America; and finally have come vast programs of government research under contract in the major universities, which have poured millions of dollars into the support of instructional, administrative, equipment, and research facilities.

Increased Paternalism of Government

New threats of government seizure of industry have catalyzed the frightened interest of the business community in recent weeks. New programs of government support for higher education have been several times introduced into the Congress in recent years, in behalf of both endowed and public education—grants for medical education, scholarship funds for our American young people, exchange scholar programs to implement Point Four—all have been either proposed or implemented. Slowly, almost imperceptibly, private, endowed education is being drugged by heady potions from the public trough.

The increased paternalism of government in both the electric business and higher education gives cause for sober reflection on the part of the intelligent citizens of our Republic. To stem the tide is their common problem.

Education needs the men of the electric industry. In the face of inflationary years, education is caught. Tuition in no endowed college or university does or can meet instructional expenses. They operate, as does the electric industry, under a high ratio of fixed costs and heavy capital investments which cannot readily be adjusted. The pressures for educational services are only slightly more vagrant than those for electric service. The endowed institutions compete with publicly supported universities as electric companies compete with Federal power projects. To meet growing needs,

colleges and universities cannot float bonds and debentures or offer stock issues. The philanthropy of a generous public has been crippled by high taxation levels, which have largely eliminated the individual donor as a source of education's support. Two alternatives exist—Federal subsidy, or prompt and wholehearted support from the American business corporation. Under the aegis of the Internal Revenue Act, which provides that up to five per cent of net corporate earnings before taxes may be deducted from tax liability when devoted to charitable and educational purposes, many a corporation has set up an educational foundation for the support of institutions of higher education. Others have such a step under consideration.

Corporation Contributions to Education

It is not a simple matter. In some states the legal implications of so disposing of stockholders' funds are not entirely clear. Many corporations find great difficulty in deciding to which institutions and to what extent and for what purposes their funds should be committed. This is no easy task. Some corporations have devoted educational funds to specific research projects in the universities, for in the laboratories of many a university campus, scientific scholars are on the trail of still-hidden secrets in such fields as atomic energy, which some day will surely revolutionize the electric industry, as well as the lives of us all. Such specific research grants are useful and make some overhead contribution to general educational purposes, although most of the money must be spent exploring the frontiers of knowledge in the area of the corporation's own interest. Other companies have set up scholarship funds for the use of their employees' children, to pay tuition and maintenance costs at the institution of the beneficiary's choosing. But let me point out that tuition scholarships are not really in support of higher education, but rather of the company's employees. Every student who pays his tuition in an endowed college or university is actually drawing a sight draft on that institution, calling for the payment somehow of the costs of his instruction not covered by tuition payments, such excess usually being somewhere in the neighborhood of 40 to 60 per cent of the total instructional costs.

Few corporations are giving anything like the five per cent of their earnings before taxes as permitted by the Internal Revenue code. The average today is approximately one per cent of these earnings annually. More courage and aggressive leadership from American business in behalf of higher education in America is, it seems to me, the very essence of belief in our way of life. What chance has private enterprise, if the lights of endowed education are turned down, in favor of the only other alternative—education under Federal sponsorship? The results will be neither sudden nor dramatic, but down the long years of the future, freedom of speech and thought and instruction will be inexorably bent to serve the purposes of the state. Control of the purse strings leads inevitably to control of thought and action; such are the immutable characteristics of human nature.

Education needs the men of the electric industry, and needs them badly. Perhaps, too, the electric industry needs the educators, who are the initial fabricators of trained manpower. Relations between these two groups have not always been close. As a one-time teacher of public utility management, I have maintained a long and continuing interest in the electric industry. I think I have observed, however, a more aggressive attitude on the part of some other industries in American business than the electric industry has sometimes shown. Other segments of the economy have more aggressively sought engineering and business graduates, who are in short supply; competition for them is very keen. This has resulted in avid competition for interviews on our campuses on the part of corporate personnel officers, and a concomitant bidding up of beginning salaries. I deplore this because of the psychological implications on the young business novitiate. But it is the free operation of the law of supply and demand.

Industry and Education Work Together

Other industries, too, have been active in their leadership of, and their participation in, business and engineering conferences on the campuses. They have been eager to become partners with higher education in sharing their business and technical know-how, in furnishing laboratory equipment of importance in their industries, in seeking consultation and advisory contacts with distinguished professors, in making available summertime jobs for members of the instructional staff and for students as well. This all is part and parcel of the growing relations between industry and education, so vital to realistic learning, so useful in the appropriate utilization of American manpower. Owen D. Young once said, "The most valuable item in the balance sheet of America has been, and if nurtured, will continue to be indefinitely, the things we do not know." Industry and education must hunt them together.

Men in education are doing their best to contribute to the sound thinking so necessary to preserve freedom. Men in the electric industry, too, are contributing time and energy and effort in a thousand directions *pro bono publico*. Their combined resources are limitless. Disorganized and isolated activities may seem pitifully small against the efforts of those who would undermine our basic freedoms. But men in education and in business leadership together can be a first line of defense. There is practically no other.

The Challenge Ahead

Great challenges lie before us. In a day when political pressures are preserving the political gains of other elements in our economy—of farm subsidies in an era of unprecedented prosperity, of gigantic labor unions levying more and ever more demands, of Federal welfare programs now running in excess of two billion dollars a year—the voice of business must be heard in behalf of sound finance and a sound economy; the voice of education must be heard reiterating, again and again, the positive values of our way of life.

Over 34 million people, nearly one person in every four of our population, receive regular checks from the Federal government, either in payment for services allegedly rendered, or for government aid. Some 25 million of these people fall into classes which would have been ineligible for government compensation a short 20 years ago.

What has come over the American people, by what opiate have we been victimized, that in 20 years we have been brought to accept the concept that government can and should be the bulwark and protection of all people in all of life's exigencies? Upon what possible soporific drug have we come to rely, that we have built up dispassionately and without serious protest a public debt of an estimated 260 billion dollars, some sevenfold greater than in 1939, and 16 times larger than in 1929?

There were at the close of 1951 just under three million civilian employees on the Federal payroll, five times as

many as in 1929. In the last two years the growth has been at the rate of one person nearly every minute, day and night, according to the figures of the United States Bureau of Labor Statistics.

Federal, state, and local tax receipts last year ran at the rate of about 64 billion dollars. In seven years the Federal administration has taken more from the American people than all the domestic taxes our government levied in the previous 156 years of our history. Are you doing all you can to arouse the nation to these implications? Am I?

In the great area of human relations the talents of education must be increasingly brought to bear. In a day which so critically needs American production, in a free world which depends upon this country for protection and for life itself, it is a sad commentary that in the past six years time lost due to work stoppages in American industry averaged just under 50 million idle-man-days a year, an indictment of an inability to work together for the good of all. In the wreckage of that idle time lie fabrications and materials which would have satisfied many an economic want, and their lack has lowered for irretrievable years the nation's standard of living and perhaps its security, and may forever have changed the pattern of our civilization.

National policy in a democracy is a multiple-minded thing. It emanates from leadership in many sources, gathering strength at many points. It is never the responsibility solely of those in public office. Cells of intelligent thought and expression in multiple locations throughout the nation eventually cause a flow, a ground-swell, that becomes public opinion, later to merge into public policy and to become implemented into public action.

In this everyone has a responsibility and can play a part. America has resources beyond all that can be mustered against her. With only six per cent of the world's land surface and with a mere seven per cent of the world's population, the American people have 85 per cent of the world's automobiles, 48 per cent of the world's radio sets, 52 per cent of the world's high school students, and far more university and graduate students, far more doctors of science and of philosophy, than can be mustered in all the world over. Last year, gross national product exceeded 327 billions of dollars, a figure of gigantic proportions when viewed from the horizon of puny efforts in the 1920's.

The American people need courage and forthrightness and integrity to face the problems of the next decade and the next. They need calm strength of purpose, to avoid the hysterias of the day.

As Robert Louis Stevenson somewhere has said: "Quiet minds cannot be perplexed or frightened, but go on in fortune and misfortune at their private pace, just like a clock during a thunderstorm." The challenge of a great partnership lies ahead — a partnership between one of the great and fundamental industries of America and the education upon which must rest, in the last analysis, the success of citizenship.

Are You Leading Your Safety Program?

(*Continued from page* 226)

they should not be too easily won; they should represent something to the recipient and should be recognized by management as something special. Disciplinary action should never be arbitrary, nor used unless there are sufficiently significant infractions, nor should punishments be out of proportion to the offense, nor should disciplinary action be taken until all normal measures for correction have been tried and have failed.

Protective equipment as required on the job should be furnished, maintained, and its use enforced.

5. No light should be hidden under a bushel. Greatest impressions are made through vision. Therefore, the safety program should be publicized continuously by every means at management's disposal. Admonitory and inspirational posters should be freely used and training provided through visual aids (motion pictures, slide films, charts, graphs, etc.). All of these materials deserve consideration, planning, and selection by management and staff.

6. Medical first aid and resuscitation should be part of all training programs in all industry. Industry owes this to itself and to its community. Trained hands are never wasted when emergency arises.

7. Training in fire prevention, recognition of fire hazards, and correction or control of hazards is an integral part of a safety program and necessary to the safeguarding of the plant or equipment.

8. Every electric company has a fleet of automotive vehicles. No one is unaware of the traffic conditions of today. Therefore, common sense, if nothing else, requires training for drivers, education of drivers, and enforcement of safe driving practices.

9. World conditions require planning for protection of property and equipment and training of personnel for emergency conditions which would be attendant upon attack or invasion or the preliminaries to attack or invasion. Plant and personnel protection and security programs will be found to be only extensions of successful accident prevention programs.

This paper has been prepared with top management personnel in mind. It is a fact of experience in dealing with top executives that an idea, with indications of how to develop the idea, is all that is necessary. Quite naturally, therefore, this paper has been restricted to matters of top policy, with such practical indications as are necessary to give effect to that policy. Constant attention to the following elements, plus unremitting activity and enthusiasm, will guarantee electric companies the benefits of successful accident prevention programs:

A clear, comprehensive, and persuasive company policy, stating in unequivocal terms the company's determination to stop accidents.

Leadership by the president, which is sincere and obvious, and complete participation in the "prevention" program by every staff or line man, and every worker.

A skillful use of the technical and training resources of the companies in the form of "general staff" committees of accident prevention. The substitution of day-by-day activity in every phase of safety for sporadic and unrewarding "campaigns" and special efforts.

The use of established practical methods in attaining these goals.

Above all, leadership. The visible participation of the top echelons is worth innumerable written directives. The application of the same high caliber of performance to accident prevention as is applied to operations will bring results.

We return to the title of this paper. Are you "in back of" your safety program, or are you leading your safety program? On your answer will depend failure or deserved success.

How Do Thoughtful Youngsters Choose Careers Today?

A panel discussion by . . .

Dr. Adam S. Bennion
Vice President, Utah Power & Light Company

W. O. Turner
President, Louisiana Power & Light Company

L. R. Gaty
Manager, Engineering Department
Philadelphia Electric Company

F. E. Verdin
Director of Personnel, The Cleveland Electric Illuminating Company (Moderator)

Presented before the Twentieth Annual Convention of the Edison Electric Institute, Cleveland, Ohio, June 3, 1952

INTRODUCTORY STATEMENT BY MR. VERDIN:

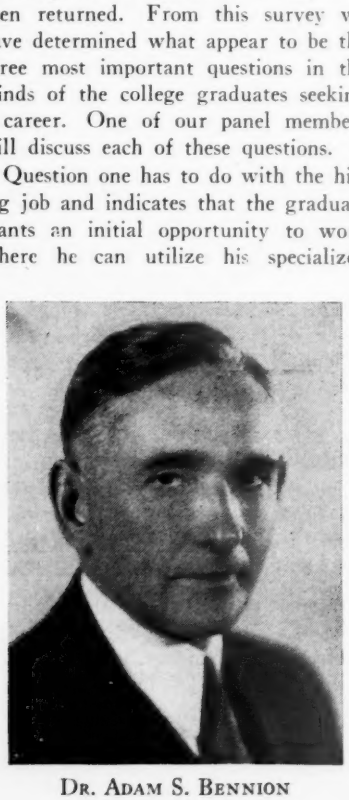
FOR six months or more, the EEI Industrial Relations Committee has had a subcommittee, under the direction of E. J. Thimme of Public Service Electric and Gas Co. of New Jersey, working on a survey designed to obtain, from faculty members and college administrators, an opinion as to how graduates and faculty people look at the electric industry. Altogether, 423 survey questionnaires have been sent out, and 289, covering 116 colleges in 46 states, have been returned. From this survey we have determined what appear to be the three most important questions in the minds of the college graduates seeking a career. One of our panel members will discuss each of these questions.

F. E. VERDIN

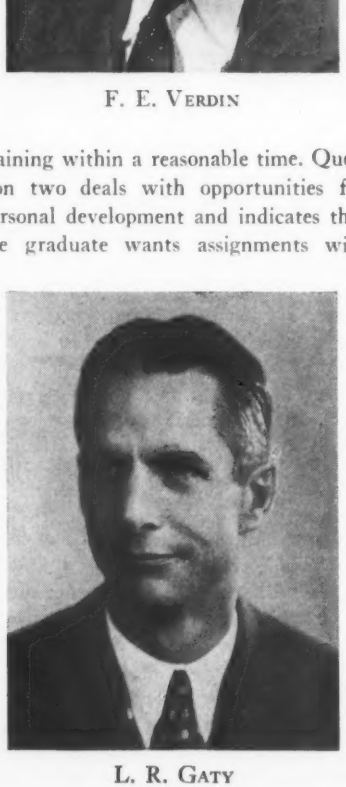
Question one has to do with the hiring job and indicates that the graduate wants an initial opportunity to work where he can utilize his specialized training within a reasonable time. Question two deals with opportunities for personal development and indicates that the graduate wants assignments with responsibilities which will develop his potential in such a manner as to present a continuing challenge to his technical competence. The third question relates to ultimate status and compensation and tells us that the graduate wants recognition of his talents and successful performance by reasonably rapid advancement, with commensurate salary growth.

But, before delving into how our industry measures up in these respects, let me review briefly some other aspects of the survey. In addition to determining what students look for in choosing a career, it attempted to find out what they believe, rightly or wrongly, that determines whether or not they choose our industry. Here are some of the highlights:

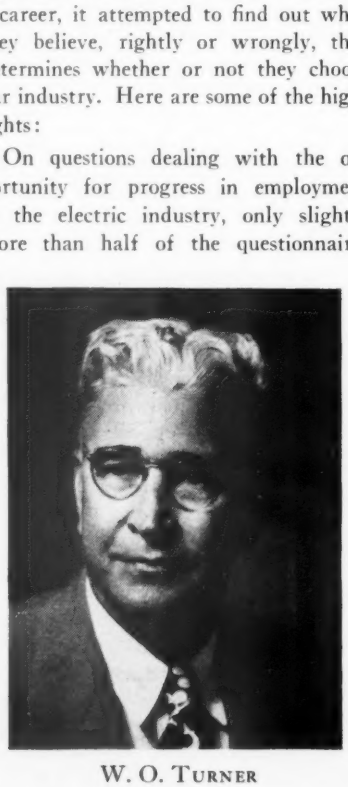
On questions dealing with the opportunity for progress in employment in the electric industry, only slightly more than half of the questionnaires



DR. ADAM S. BENNION



L. R. GATY



W. O. TURNER

gave us a reasonably favorable reply. From those who replied unfavorably, the surveyors received a number of rather vociferous and pointed comments.

In replying to questions dealing with compensation, over two-thirds of the replies were decidedly on the unfavorable side. They demonstrated belief that our hiring rates are low and that we pay lower salaries than are paid for comparable responsibilities in most other industries.

With respect to the challenge of the work, replies were divided about equally. However, many comments were received claiming that the work is too routine and that the really challenging work is done by manufacturers and engineering firms for our industry.

As to our job of selling, the professors said that our recruiting job is only fair. While our cooperation is good when they seek it on matters in which they are interested, we are not too forward in making ourselves available to them, and we have done a poor job of presenting our case to them and their students.

And so you have, in capsule form, the highlights of comments from educators, representing the regard in which the electric industry is held by students with whom these educators come in contact. Now let us determine to what degree the industry satisfies the previously mentioned points considered by college graduates in choosing a career. Mr. Turner will discuss giving the graduate oportunity to use his specialized training within a reasonable time; Mr. Gaty will discuss providing the graduate with assignments which present a continuing challenge to his technical competence; and Dr. Bennion will deal with job advancement and salary growth.

STATEMENT BY MR. TURNER:

TWO factors within the electric industry have a definite bearing on satisfying the graduate's desire to utilize his specialized training within a reasonable time. The first is the fact that our industry is the type where specialized college training can be made use of after a very short period of orientation. Unlike those of many other industries, our training programs for college graduates are designed primarily to orient the trainee in the many aspects of our business. Following this short period of indoctrination, his job assignment invariably calls for him to put his specialized training to work much sooner than would be the case in many other industries.

The second factor is growth. It would be a bit trite to cite figures on the tremendous growth experienced by this industry during the last ten years. Suffice to say, it is one of the most unprecedented of any industry, and ours is a relatively young one.

Challenging Assignments

This growth has made it necessary for us to push young college graduates into jobs which are far more challenging than the drafting-room assignments they might have had in other industries. In many cases, their orientation had to be cut short to meet the demands incurred by our heavy expansion programs. They are tackling problems now with only one or two years' experience behind them that, prior to 1940, many of us would have been inclined to refer to more experienced personnel. All of these problems arising out of growth have forced us to rely on our young college graduates to assume a more responsible part of the work load.

I seriously doubt whether many of the college graduates of today are aware of the unusual growth in our business, and more important, what this growth means to them in putting their specialized training to work in a reasonably short period of time. It should be pointed out, too, that the end of this growth is not presently in sight. New expansion plans are being announced daily, and greater loads of all classes are in the offing. Electrical living and the use of electric power for productive enterprises are still in their infancy.

Certainly the growth of our industry would be a fitting challenge to the college graduate who wanted to get his feet wet in a hurry.

Then, too, there is an ever-increasing reliance of other industries upon electric power to achieve greater efficiency and production. This in itself should give the industry a place of unique prominence in the mind of the graduate. The electric switch has become an indispensable part of our modern production system. Electric power is being called on to do more and more of the work. For example, in 1940 the average annual kilowatthours used per worker were 9382. In 1950, they increased by 50.4 per cent of 14,111 per worker.

The college graduate probably does not realize the growing importance of our industry to the industrial economy of our country. And we can share no small blame for this. It would be well for him to know that this importance takes on greater significance as industries requiring our services continue to expand. There is a great essentiality to our business which gives it the all-important stability to weather depression periods. The college graduate should be reminded that, in thinking of a career at the tender age of 21 or 22, he is apt to go through two or three depression periods, if our business cycles continue to run true to form, before he reaches the twilight of his career.

It appears to me that what we have to do is to present the facts surrounding our industry—its growth, its importance to our industrial economy, and its stability—if we are to overcome some of the anxiety our college graduates have for it as a career field. And in the presentation of these facts, we will probably have to do a little more dramatizing, lest these facts become nothing more than drab figures.

STATEMENT BY MR. GATY:

A LOT of thought has been devoted to the best way of conducting a training program for the technical graduates employed by us, both from the point of view of stimulating their interest and of providing a challenge to their ingenuity and technical competence. Following completion of this training period, assignments are carefully chosen to match the men with the jobs.

An assignment with responsibilities that present a challenge to the new employee requires that he must have the ability to pick up the challenge and carry it forward. Problems are myriad, and men who have the initiative to carry them through to a solution are scarce. This situation might be compared to a baseball game in which each pitch is a challenge to the batter. If the batter constantly strikes out he is of no value to the team and will soon be put back on the bench or dropped completely. However, the man who can consistently hit the ball and can make a few home runs is the man who gets the glory and the large rewards.

The electric power industry has an abundance of unsolved problems. This applies not only to the technical field but to human relations, relations with

governmental agencies, and many other fields. I mention these two particularly, because any engineer who progresses to a position of importance in the industry will inevitably have to solve many problems of human relations and relations with governmental agencies. These two alone present a challenge which is worthy of the mettle of any graduate. The first challenge that confronts a new graduate is that of human relations, getting acquainted with the largest number of people in the company with which he associates himself and with the other technical graduates in the community and selling himself to these people. This is an immediate challenge entirely under the control of the new employee.

The field of the electric company engineer encompasses practically the entire engineering profession. There are problems in civil, electrical, mechanical and chemical engineering, as well as in the associated fields of physics and chemistry. Manufacturers and engineering firms cooperate wholeheartedly in reaching a solution to the various engineering and operating problems that are constantly occurring. However, someone must first see the problem, must define it and outline it to the manufacturers, must work with them to see that the solution is practical and reasonable, and must then return and apply the solution to the original problem to make sure that it is comprehensive and does not involve other corollary problems. Sometimes the proposed cure is worse than the original disease, and it is the responsibility of electric company engineers to appraise the situation so that service reliability continues to improve and proposed changes are economically sound.

The younger engineers that are hired today sometimes feel that the training work and the problems of routine assignments are beneath their ability and dignity. The employer's responsibility in the early period of employment is to show these men that the daily routine, the general knowledge acquired, and the solving of simple problems provide a background which is necessary to taking on larger responsibilities.

The electric industry, along with other industries, has been careless in the utilization of engineering talent in the past. Good engineers have been assigned for long periods to routine work which did not utilize their talent and ability. Today this has been largely overcome, and our industry is re-examining the qualifications and abilities of existing engineers and is looking for the best of the new graduates. These men are being offered an unusual opportunity for advancement.

Summarizing, there are many problems in the electric industry that are a challenge to the best engineer. The industry is searching for engineers who will pick up this challenge and find the answers. There is a great need and a real opportunity for graduates who have initiative and are able to meet the challenges of a dynamically growing industry.

STATEMENT BY DR. BENNION:

NINETEEN hundred and fifty-two is a bonanza year for graduating engineers. To paraphrase Wordsworth:

Bliss is it in this dawn to be alive,
But to be an engineer is very Heaven.

Demand so far outruns supply that engineering graduates are pursued by opportunity. On one college campus, a graduating class of 145 engineers has been interviewed by 290 institutions from 30 states as hopeful employers.

A combination of circumstances has brought about this heavy demand, including:

Demand Factors

1. The Korean War with its draft and enlistments.
2. A stepped-up program of production.
3. The need of engineers in the country's military establishments.
4. The call for trained men in such fields as atomic research and electronics.
5. The need for trained men in newly expanding industries such as oil and gas.
6. The increasing need in governmental circles, both Federal and state, for engineering specialists in such programs as road and bridge building, reclamation, etc.
7. A new appreciation of the value of sound engineering training as a preparation for the effective discharge of managerial responsibility.

When we consider that in each of the three years, 1949, 1950, and 1951, American industry absorbed some 45,000 graduate engineers — available because of the return of the GI's to the campuses of this country—we can appreciate that the national 1952 estimated crop of 26,000 engineering graduates will be wholly inadequate. The estimates of 20,000 for 1953 and 17,000 for 1954 are still more discouraging.

It is evident, in the face of such shortages, that no mere increase of salary can solve the problem. Salary figures take on particular significance, however, when big offers deprive electric companies of new recruits and even cut into regularly established personnel.

Rumors are afloat that fabulous offers are being made to engineering graduates. Perhaps some such offers have been realities but most of them seem to disappear when run down. To get at actual facts, we decided to check with ten representative electric companies between Denver and the Pacific Coast and the universities which serve them. The findings of our inquiry are interesting. Money is only one element in the decisions which are limiting the number of prospective engineers who are available for jobs with electric utilities.

Electric companies have been under vigorous, if not vicious, attacks for 20 years. These attacks have led many young men to question whether or not the government would eventually take over the business of supplying the nation with electricity. Perhaps, because of these threats, the industry has been careful, even conservative, in the wages it has offered. The evidence is clear that, generally speaking, the companies have been less dynamic in their recruiting on university campuses than have some other organizations. Then, too, glamor attaches to some of the newer and more sensational developments, with their fortune-making potentialities.

The following tabulation indicates how electric company monthly salaries for beginning engineers have changed during the last three years in the ten companies surveyed:

	STARTING WAGE (DOLLARS)		
YEAR	LOW	HIGH	AVERAGE
1950	225	285	262
1951	243	313	280
1952	257	328	295

As against these figures, other employers in the area are now offering wages as follows:

STARTING WAGE (DOLLARS)		
LOW	HIGH	AVERAGE
250	375	310

Under the present demand, it was pointed out that many of the offers approached the high of $375. It is clear that electric companies having low or average wages cannot compete with this figure. The progress of beginning engineers in the electric industry is reflected in these figures showing average pay in dollars at the end of the following periods:

6 MOS.	1 YR.	2 YRS.	3 YRS.	5 YRS.	10 YRS.
295	321	342	360	404	Individual consideration

It should be pointed out that in addition to these basic amounts, fringe benefits in practically all of the companies in question are provided in an amount equal to roughly 20 per cent of the average pay. Furthermore, of course, electric company employment is well stabilized and relatively free from shutdowns, seasonal lulls, and discontinuance.

Suggestions for Action

A listing of the suggestions for action which we offered in the Industrial Relations Committee survey are:

1. Capitalize present engineering strength by having stenographic and clerical pools take on routine and detailed work not strictly of a technical nature.
2. Make provision for merit increases to retain the present force.
3. Offer summer employment to sophomore and junior engineering students.
4. Join with universities in visiting high schools on "career" days for vocational counseling.
5. Consider special temporary employment of engineering professors in their off-quarters and special assignments of our own engineering staffs as campus lecturers.
6. Make special campus contacts throughout the junior and senior years with prospective engineering applicants to acquaint them fully with the advantages of electric company employment.
7. Encourage engineering students to make regular tours of power plants and electric company offices.

Over the long pull, our best hope seems to lie in helping to stimulate larger enrollment in university engineering courses and in keeping our salaries in line with sound engineering practice.

CONCLUSION BY MR. VERDIN:

IF I were to sum up what has been reported by the panel on the over-all opportunities for young college graduates in the electric business, I would say, "Better than they think." What does that tell us? To me it says, "We haven't done a good selling job."

As to the first major question raised here today, there are extensive opportunities for the young graduate to start using his specialized training almost immediately upon going to work in our industry.

With respect to the second major question as to growth potential and challenge, this growing giant of ours has an abundance of unsolved problems—not only in technical fields but in many others such as human relations, governmental relationships, and public relations. And the people with ability to take bigger strides—to show us how things can be done better, easier, cheaper—will be the boys who have unlimited opportunity to move to the top—and fast!

Regarding the thoughtful youngster's desire for recognition of his talents in the form of advancement and compensation, here the pattern may not be clear cut. We can show cases of outstanding achievement and advancement, or the converse could be pointed out by using individual cases. Certainly on this question, with the tremendous differences between individuals in ability and performance, an "average" type of answer is inadequate. It has been pointed out repeatedly, however, that recognition of outstanding performance is prevalent in our industry.

Substantial Negatives

In spite of what our panel has brought out here today on the positive side, there must be some substantial negatives which create the prevailing attitude of young gradutes, which is generally unfavorable toward our business. In attracting graduates, the important thing is not whether they are right or wrong in their opinions, but the fact that they don't regard us very highly.

Too many companies choose to ignore the high starting rates offered by others and say, "Oh, we can't do anything about it anyway" or "We'll get along without them until this flurry blows over." In too many cases the young chaps have to wait too long for an opportunity to get their teeth into challenging work; find but little opportunity to develop themselves through training programs and a helpful attitude of personal guidance by their supervisors; and wait altogether too long for recognition of their talents and abilities with commensurate progress in compensation comparable to that being made by their classmates in other fields.

A Program for Consideration

So I would suggest that we take steps to make sure that we are "better than they think" in every company in the industry. And I submit for your consideration a program which will accomplish this:

1. Study the hiring rate. It need not be top, but it must be respectable in comparison with competition.
2. Make adequate provision for progress in job assignment, promotion, and pay for these youngsters as they come into our organizations.
3. Provide for training and development of these boys as individuals, whether a formal training program is desirable in your company or not.
4. Use these people at their highest skills. Don't make them wait ten years to get their feet wet if they can "take it" and "put it out" today.
5. If you are not already doing so, bring your salary progression structure—and for that matter your whole salary structure—in tune with 1952 practices of other industries with whom we are in competition for manpower.
6. Instead of stressing the civil-service-type security in electric industry jobs, let us play up the competitive phase of our business and the rewards for outstanding achievement.
7. And, finally, develop a program of educational relations—not just recruitment but a planned program of contacts with colleges, including such things as faculty seminars, summer employment for teachers, cooperation in college undertakings, speaking or lecturing before college groups, and the like.

In short, let's all become "better than they think", and then let's "tell 'em so" by every device at our command.

The Complexities of a National Water Policy

By Abel Wolman

Professor of Sanitary Engineering, Johns Hopkins University

An address before the Twentieth Annual Convention of the Edison Electric Institute, Cleveland, Ohio, June 4, 1952

THE expenditures for water-resources development in the United States are approaching several billion dollars annually. Federal projects contemplated for the next ten years will undoubtedly exceed 50 billion dollars. These developments cover the entire field of domestic and industrial water supply and pollution, flood control and water-flow retardation, navigation and inland-water transportation, irrigation, hydroelectric power, recreation, fish and wildlife, land drainage, and the collection of basic water-resources data.

It may surprise some people to know that less than a quarter of a century ago the problems of water development appeared relatively simple and certainly less confusing than today. One important explanation for this change in both the number and the complexity of issues is that, until about 1930, water projects were dominantly local or regional in character, were fewer in number, and were largely single purpose in function. With the exception of the Colorado River development and the flood protection program in the Lower Mississippi Valley, Federal interest in such undertakings was largely restricted to developments under the general Reclamation Act of 1902.

Unprecedented Federal Participation

The excessive drought of the 1930 to 1932 period, the great economic depression, the extraordinary rainfall periods of 1936 to 1938, inclusive, accompanied by a social philosophy based on relatively broad Federal obligations, changed the entire picture by 1940. These events pushed Federal participation with legislative sanction into a variety of fields of water development to a degree unprecedented in previous history. These steps, accompanied for the most part by the virtual elimination of local financial participation, resulted, first, in a tremendous expansion of annual expenditure and, secondly, created great legislative confusion in national

ABEL WOLMAN

policy with respect to specific agency responsibility and to practices of local reimbursement.

Such a difficult impasse was apparent as early as 1935, so that for a number of years the National Water Resources Committee struggled with many of these problems until the early 1940's. This committee made many recommendations directed toward the integration and simplification of legislative policy, administrative responsibility and local financial participation. Its recommendations, as many of those which have followed, are distinguished primarily by their almost complete failure to capture either citizen interest or legislative and executive acceptance.

Engineers Joint Council

Once the check-rein of local financial participation was eliminated in such projects as flood control and reduced in others, competitive confusion and annual Federal expenditures increased 10, 20, and 50 fold. This state of affairs became so acute by 1949 that the Engineers Joint Council decided that the subject be reviewed once more in order to attempt a further restatement of principles, if these could be unanimously agreed upon as a guide for legislative action and administrative practice.

The Engineers Joint Council represented the following five national engineering societies: The American Society of Civil Engineers, the American Society of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers, and the American Institute of Chemical Engineers. The combined membership of these societies is approximately 130,000. Some 80 engineers participated in this study and analysis of the water resources problem of this country, and in 1950 the council presented to the President's Temporary Water Resources Policy Commission "A Statement of Desirable Policy with Respect to the Conservation, Development, and Use of the National Water Resources."

Findings of Panel

Contrary to prediction, this large group of engineers, chosen from every field of experience and representing in many instances individuals long in public office on the Federal, State or local levels, produced proposals of practically complete agreement. Their efforts in the monetary sense would represent about a quarter million dollars of normal engineering fees, though none of these men were reimbursed for their extensive, objective deliberations. The essential findings of the Engineers Joint Counsel panel differ little from those reached by most objective students of the problem over the last half century. Four significant general principles emerge, as follows:

1. Local, state, and private responsibility should be preeminent and be consciously and effectively nurtured and extended in water-project programming.
2. Bookkeeping should be clear and forthright and should be based upon full inclusion of all costs and reimbursements.

3. Costs should be collected from those benefited either directly or in a subsidiary way. General intangible benefits should preferably be regarded as a margin of advantage in project selection.
4. Legislative authorization and policies should be uniform for all the Federal agencies responsible for water-resources development.

The President's Temporary Water Resources Policy Commission presented its report in January, 1951, and prepared legislation to put its recommendations into effect. The proposed legislation, however, was only released to the public in the spring of 1952. That commission, too, found the same inconsistencies and incongruities under existing congressional enactments, the same competitive standards of economic justification, and the same variations in allocation of cost between those benefited and the general Federal taxpayer.

Lack of Single, Uniform Federal Policy

The conclusion of the President's Commission is particularly striking, since once more it points up the findings of almost every individual or group that has reviewed this problem. The commission states that "There is today no single, uniform Federal policy governing comprehensive development of water and land resources. This is a time for action based on sober consideration of objectives and methods. Continuation of present policies, or lack of them, will mean a continuing waste of money and effort in the pursuit of conflicting goals."

It is not captious to point out that, in the light of these repeated striking conclusions, the impatience of political leaders to move forward rapidly with great Federal expenditures is one of the most alarming characteristics of 1952. One cannot escape the conclusion that this desire to move forward with great rapidity, even though the goals and the methods of obtaining the goals may both be flagrantly in error, can only be the product of misguided emotion or of political necessity or both. The real challenge in this entire problem is how such a tide of activity may be stemmed sufficiently long enough to take stock and to adjust policy and method so that expenditures of whatever amount, large or small, are made with as much technical and social wisdom as we may summon up. In none of the deliberations so far briefly summarized has the objective been primarily to agree upon one magic amount of annual expenditure versus another. All of the discussions have centered on the problem of spending what we do spend for water-resources development in the most logical, the most competent, and the most economical manner.

When these problems are discussed, however, it is often charged that these proposals are anti-social, that they will deprive people of their appropriate share of our water resources. We have reached a strange impasse when any proposal for intelligent stock taking of our policy for water-resources development is met with the charge that such proposals are contrary to national welfare. To spend for the sake of spending can hardly be a permanently sound objective of national policy. Senator Douglas has aptly paraphrased the problem in water-resources use, as in other areas, by his comment that "one can be a liberal without being a wastrel."

Since most of the discussion up to this point has been concerned primarily with principles, it is useful to apply these principles to a specific case. For such a case history, the projected program for the Missouri Basin is chosen, not only because it represents the largest project hitherto proposed but, more important, because it illustrates in its project planning and execution some of the deficiencies with which the citizen of this country should be concerned.

The Missouri Basin Program

The Missouri Basin is over 500,000 square miles in area, includes all or some of ten states, and contains some 8,000,000 people. It is larger than the combined areas of France, Belgium, the Netherlands, Denmark, Germany, Switzerland, and Italy. For sheer size alone, it should give the planner considerable pause. If we were confronted with the planning of a water-resources development program for the countries just mentioned, we probably would insist upon a reasonably long period for technological analysis, for project evaluation, for execution, and for financing. In this area, however, many of these objectives have been telescoped into a period of less than ten years. Already almost a billion and a half dollars have been spent on projects, and somewhere between eight and 12 billion dollars of expenditure are contemplated for the future.

In the undertaking, competitive legislative policy and competitive agency responsibility are still unresolved. Sharp conflicts of opinion between the Department of Agriculture, the Department of the Interior, and the Corps of Engineers still prevail, although these conflicts are masked under the general "cover-all" of the Pick-Sloan Plan. This plan has undergone major change as experience and natural calamities have pointed up difficulties therein. Battles between the advocates of upstream proposals for retardation of runoff and downstream proposals for major impoundments make interesting reading but remain poor bases for ultimate solution.

Local Participation Planning

Owing to the fact that virtually all of the undertakings, with the exception of those proposed by the Department of Agriculture, rest upon expenditures essentially Federal in character and in some extreme, such as flood control, largely non-reimbursable by the beneficiaries, it is gratifying that important steps have been taken in the basin to develop a degree of local participation in planning. These steps would be even more heartening if the states and their local subdivisions had a larger and more effective participation in the repayment of costs. In execution of projects, the Federal government under existing policy is dominant. When projects are completed, principles controlling operation will create parallel issues because of the highly competitive demand on multipurpose projects by various interests.

Perhaps one of the most disconcerting features in Missouri Basin project planning stems from the fact that as natural catastrophes have occurred, major changes in program have been rapidly, if not hastily, projected. The July, 1951, floods in the Kansas River basin presented unusual features which should carry significant warnings against the desire for speed of action. This was the greatest flood in the Kansas River basin, of which reliable records are available, and it exceeded the "design flood" of 1903 by a very considerable percentage. Analysis of this situation disclosed the further disconcerting fact that the 1951 flood peak could be exceeded by nearly 35 per cent. N. T. Veatch has concluded that "There seems to be no reason, from a meteorological point of view, why such a situation could not occur."

The experience during the 1951 flood, as described by Mr. Veatch, is enlighten-

[1] N. T. Veatch, "What Happened at Kansas City, July 1951, Flood in Kansas River Basin," presented before the American Water Works Association, Kansas City, Mo., May 6, 1952.

ing with respect to problems of operation. On July 1, the Kanopolis Reservoir, designed for major flood protection, contained water at such an elevation that 82 per cent of the storage volume originally allocated to flood water was unavailable. With releases subsequent to July 1, the flood-storage was still occupied to the extent of 74.6 per cent. By July 14, the water level in the reservoir was almost at spillway crest, with virtually no room for flood runoff. The initial conservation pool level in this reservoir was supposed to be 48 feet below the spillway crest. If it had been so maintained, the flood storage space on July 10 would have been only 16 per cent occupied.

Without pursuing this situation in detail, it should be borne in mind that, following the July, 1951, flood, the program for controlling such a situation in the Kansas River basin was changed by December, 1951, to the extent of proposing 14 additional reservoirs at an additional expenditure of some $350,000,000. How are these facts to be reconciled with statements by prominent officials that, if the original project had been completed prior to July, 1951, the damages would have been avoided?

Need for Greater Flood Protection

The 1951 flood experience in the Kansas River basin illustrated the necessity for a vastly greater flood protection program than had ever been contemplated. The revised program, therefore, renews the demand for answers to a variety of still unanswered questions. Is the revised program an invitation to still further encroachment on the flood plain by industrial and residential property, with consequent later increases in flood damages? Is the program to be accompanied by a rigorous flood-plain zoning restriction? It is to be paralleled by conversion of bridge openings in order to avoid the events in the Kansas City area in 1951, when inadequate bridge ports caused tremendous flooding by back water?

From the standpoint of public policy, however, the most important feature of the whole experience lies in the following conclusion by Mr. Veatch: "Had all authorized or definitely planned flood-control reservoirs, including the Tuttle Creek, Milford, and Perry Reservoirs, been operating during the July, 1951, flood period, the reduction in maximum stage at Kansas City would not have been sufficient to prevent overtopping of the levees and flood walls in the Argen-

(*Continued on page* 255)

Economist's Nightmare . . .

ONE night some months ago, after reading about new proposals to bring economic security and contentment to us all by the simple expedient of Federal legislation promising more and bigger handouts, I had an unusually vivid dream, and I'd like to tell you about it. I realize that it's always difficult to describe visits to the dreamworld in words that serve to convey to the listener or reader an impression that corresponds, even faintly, to the experience of the dreamer, but I'll do my best.

I suddenly found myself overlooking a vast plain, the edges of which were lost in a sort of purple fog. In the central area stood an enormous, glass-like vat or tank, open at the top, giving off vapors that strongly suggested hot Irish stew or mulligan. Surrounding this container were a great multitude of creatures, something like human beings but reminding one of recent pictures of imaginary visitors from Mars. Although varying in size and other characteristics, a prominent feature of all was the paunch. I also noticed that all or nearly all of these weird creatures were equipped with two long pipes, a pouring-in pipe and a drawing-out pipe. The general practice seemed to be for each to spend considerable time and effort pouring in some ingredient which represented its special contribution to the stew, and from time to time each would lay aside its pouring-in pipe and devote itself to sucking out from the top of the tank, through its other pipe, some of the savory mixture. As I watched this strange scene, a change began to develop. More and more individuals began to neglect the pouring-in operation and spend an increasing amount of time at the business end of their drawing-out pipes. At first the change was not very noticeable and the majority went ahead with the intermittent activities of pouring and drawing out. But as the number devoting their attention solely to consuming stew increased and the number actively engaged in pouring in dwindled, those who were continuing to pour in finally began to see what was going on. When this stage was reached—realization by the decreasing number of pour-inners that they were being exploited by the increasing number of draw-outers—the process of change moved with startling rapidity to a climax. In what seemed no longer than a matter of seconds, the orderly, rhythmic process of contributing and consuming disintegrated before my eyes. Almost with one accord the remaining contributors threw their pouring-in pipes away and frantically grabbed their drawing-out pipes. And as the contents of the tank rapidly declined under this mass attack the creatures set up a horrible howling and pressed toward the tank in a desperate effort to keep the ends of their pipes in contact with the falling level of the life-giving stew. In an instant, as often happens in dreams, what had been no more than interestingly disturbing became a frightening nightmare. In the final mad rush great numbers of the creatures were trampled to the ground around the base of the tank, and those temporarily surviving climbed on the bodies of the dead and dying in their struggle to reach the top and thus get within sucking distance of the fast-diminishing contents. The howling became unbearable, the pleasant odor was replaced by a terrible stench—and I woke up, literally in a cold sweat and with a feeling of nausea.

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The Future of Private Power Companies

By J. E. Corette

Vice President and Assistant General Manager, The Montana Power Company

An address before the Twentieth Annual Convention of the Edison Electric Institute, Cleveland, Ohio, June 4, 1952

THE power policies of the Interior Department are reasonably uniform throughout the nation, so that experience in one area where Federal projects exist and are under construction should be indicative of what to expect in other parts of the country. Therefore, as an electric company man who engages in business in a state which now has and for many years has had the issue of Federal power dams and transmission lines, I shall endeavor to present the situation as it exists today in regard to Federal power and private power companies, and the outlook for the future.

The program of the Interior Department has been stated many times by high officials and is completely understandable. Everyone has witnessed the campaign for Federal generating plants and Federal transmission lines. I am sure you will agree that this plan, if carried out, eventually would lead to socialism, not only of the electric industry but of most other industries.

In the first part of this presentation, I shall endeavor to give you the facts to show how far the Federal power program has progressed. My outlook is that if the people of the nation continue to be alert, the Federal power program, as outlined by its authors, will not succeed.

Congress definitely has not adopted and does not look kindly upon a Federal power program in which the Interior Department would take over the private power industry. I am very satisfied with the attitude evidenced by Congress when an electric company is doing or is ready and willing to do the job.

I believe that the people do not look kindly upon any such Federal power program, and I am convinced that by continued presentations to the people of the facts involved we can and will stop and turn back such a program.

After presenting the status of the Federal power program today, I shall endeavor to give facts to show why the Federal power program will not be carried to its ultimate conclusion and why our industry will continue to be the successful and the prosperous one it is today.

J. E. CORETTE

By the end of June, 1952, the Federal government will have spent approximately four billion, 258 million dollars on projects involving power, exclusive of the two billion, 700 million which has been appropriated for REA. The spending of this money has been concentrated in certain areas.

Fig. 1, Location of Spending on Federal Power Projects, shows in every area on the map that the Federal government has built or is building generating plants and transmission lines, and if the present program of the Interior Department is continued, the future of the companies in those areas is threatened. However, in practically every one of those areas, the private electric companies have been opposing with considerable success appropriations for the Federal power program.

One reason why the Federal power program has had such extensive development in a comparatively few years is that in the early stages and up until the last few years only a few companies were affected, the balance of the industry did not realize the danger, and the opposition to the program was extremely limited.

Fig. 2, Proportion of Electric Companies Directly Affected by Federal Power, shows that in 1931 only 1 per cent of the Class A and B companies was directly affected by Federal power plants. Many uninformed and unaffected companies thought that the socialistic movement was local in character, was in some way due to the failure of the local companies to measure up to the situation,

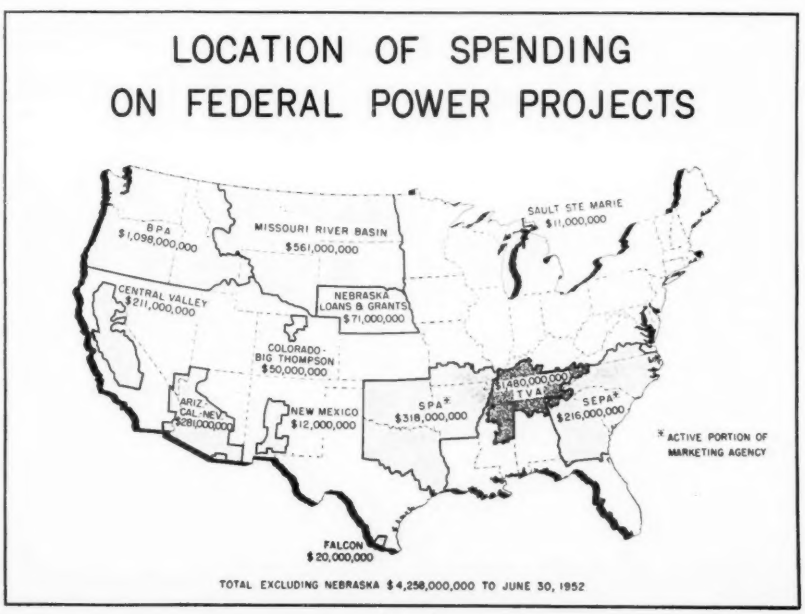

Fig. 1

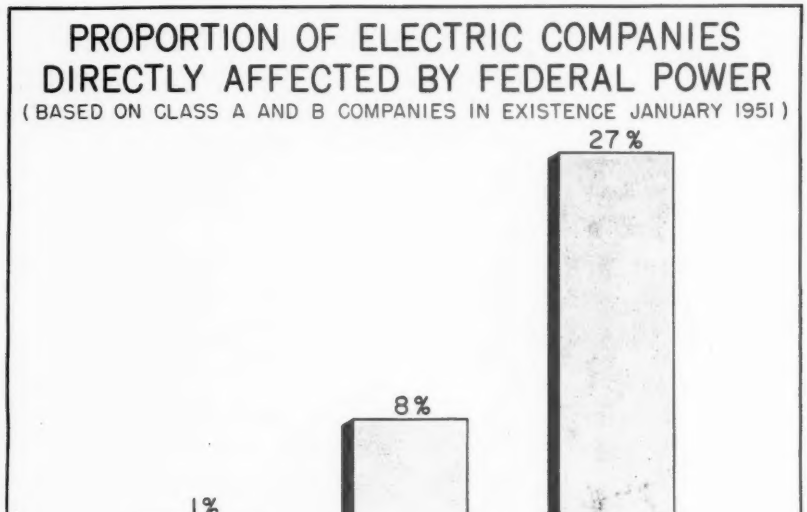

Fig. 2

and in any event would never reach them. But, of course, it has moved forward and spread out.

By 1941, ten years later, the proportion had increased to 8 per cent and by 1951 to 27 per cent, including those that had been expropriated. And by "affected" I mean right up against the gun. A lot more are well aware of what is in store for them, others are beginning to be alarmed, while still others are going their various ways without paying too much attention to what is going to hit them in due time.

A comparison of the Federal projects which we now have and which are contemplated for the future is very interesting and shows the progress of the Federal power program up to the present time and what is planned for the future.

Fig. 3, Status of Federal Power Plant Program, shows that the Federal government has completed or has under construction 119 projects with approximately 16,672,000 kilowatts of installed capacity. However, the government has authorized, approved, and proposed 649 plants with a capacity of almost 52,000,000 kilowatts.

Fifteen and one-half per cent of the total plants have been completed or are under construction, but they constitute 24.5 per cent of the total kilowatts installed and to be installed. In other words, the plants which have been or are being constructed by the Federal government, in general, are much larger in capacity than the contemplated plants.

Fig. 3, totaling 768 plants, shows those which we have been able to identify. Undoubtedly, many more generating plants and transmission lines will be proposed as the years go by, including steam-electric stations not now formally in the program.

Anybody's Guess

Just what this program would cost is anybody's guess. The Water Resources Policy Commission, in its recent report, gave figures ranging from $70 billion to $115 billion. Based on past experience, we can anticipate that the final figure would exceed these vast amounts if the program were to be carried to completion. These amounts indicate a tremendous burden on taxpayers, which is entirely unnecessary.

Fig. 4, Disposition of Electricity Produced at Federal Dams, shows who gets the electricity produced at Federal dams and steam-electric stations. Including losses, nearly half goes to the so-called preference customers. The next largest group is certain especially-favored large industries. The electric companies use only slightly more than 20 per cent of the total, although they serve 80 per cent of the people of the nation.

TVA can be considered as a good example of what we can expect in Federal power in the future unless the program is stopped. TVA started as a means of disposing of the output from Wilson dam. It secured some steam plants in the course of its acquisition of electric companies in the area, and built another steam plant during World War II under the guise of national defense. It built the New Johnsonville steam plant on the plea that it was responsible for the power supply in the area, and now the lid is off. In a few years TVA will be a steam-electric system with hydro for peaking purposes.

The pattern of Federal power has become very plain. Because Congress has not looked with favor upon the establishment of additional valley authorities, Federal power marketing agencies are being set up by edict of the Secretary

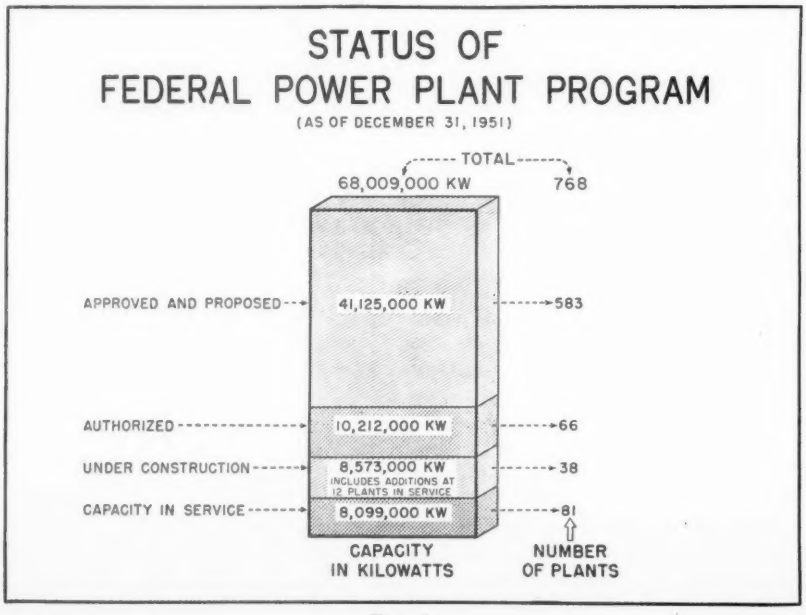

Fig. 3

of the Interior, without the consent of Congress.

Fig. 5, Federal Power Marketing Areas, shows the five major power marketing agencies of the Federal government. Four of these, the Southeastern Power Administration, the Southwestern Power Administration, the Bonneville Power Administration, and the Bureau of Reclamation, are a part of the Department of the Interior. TVA is an independent Federal corporation. The figure shows a sixth area, the State of Nebraska, where the enterprise has been financed in substantial part by the Federal government but is still on a state basis. There are also some other similar areas which are small and which I have not shown. These marketing agencies are tax-free, subsidized utilities. They are the nationalized segment of the utility business.

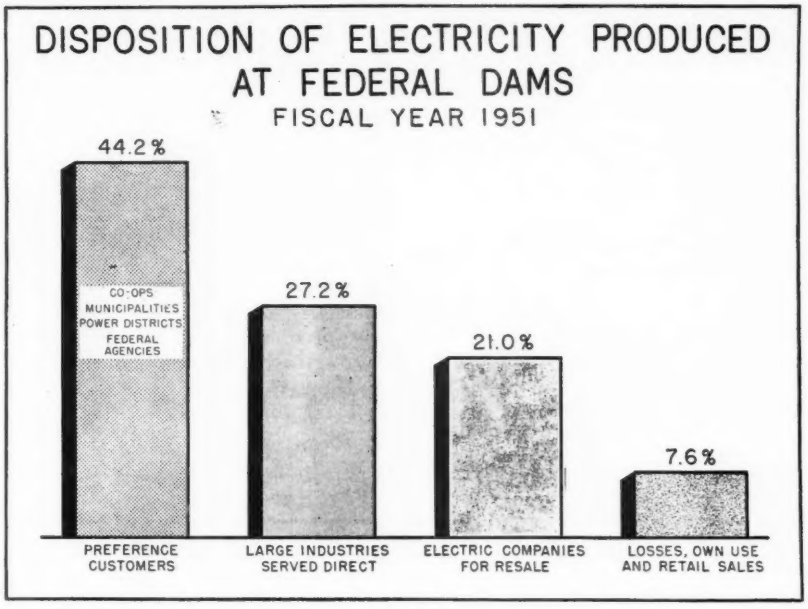

Fig. 4

Concealed Weapons

We have learned by bitter experience that Federal dams which were authorized ostensibly for the purpose of irrigating our arid lands, or controlling floods, often turn out to be weapons designed to destroy the electric companies in the area and put the Federal government in the power business.

As examples, the Federal government now operates or has under construction 15 steam-electric plants that have no other reason for existence than the generation of electricity; TVA has nine hydroelectric plants that are strictly for power; other Federal hydroelectric plants—Hungry Horse, Canyon Ferry, and Clark Hill, to name three—originally were authorized as multi-purpose projects with reclamation or flood control benefits, but today are power plants and nothing more.

Many Department of Interior projects being urged at the present time are being sought without regard to purposes other than power, and the Interior Department itself frankly admits it is in the electric power business.

In the Roanoke Rapids case, with which you are familiar, Secretary Chapman stated his position as follows: "The interest of the Secretary of the Interior is that of a competitor of Virginia Electric & Power Co. in the sale of power in the Roanoke River area of Virginia and North Carolina."

The Southwestern and Southeastern Power Administrations are engaging in another practice that is extremely dangerous and beyond the scope of the law under which they operate. They are purchasing steam-electric power for resale, although Section 5 of the Flood Control Act of 1944 does not contain a single word giving them this authority. The Arkansas Circuit Court had this to say about the practice: " . . . the National Congress, which prescribes the powers and duties of SPA, only vests that agency with authority to sell and distribute hydroelectric energy produced by dual-purpose flood control dams. It is not authorized to purchase energy produced by steam plants."

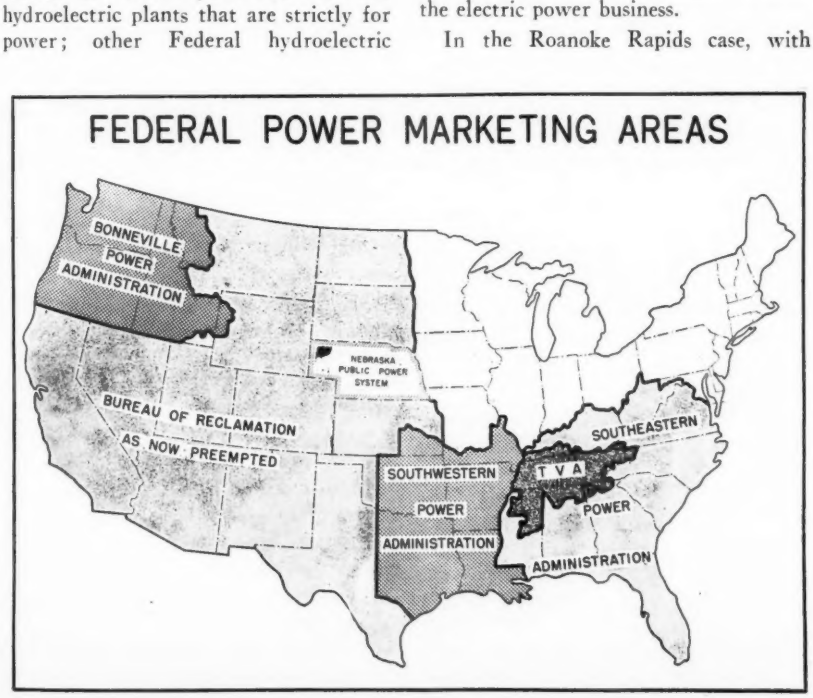

Fig. 5

What Lies Ahead

This brings us to the future of our truly great industry. It can be summarized as follows:

1. If the Interior Department policy continues as it is today and if the thinking in Washington is such that the program is carried out as set forth in the Ickes memorandum of January 3, 1946, and in the testimony which the top Interior Department officials have given be-

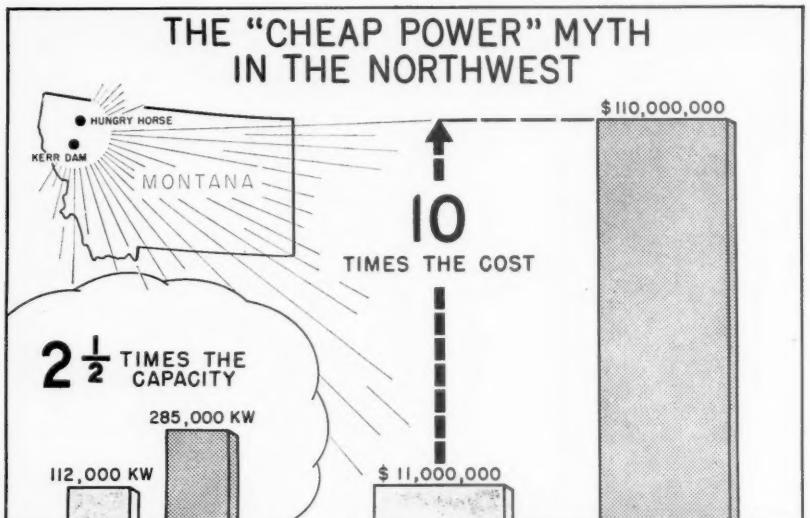

Fig. 6

fore Congress in each of the past several years, it will inevitably mean the nationalization of our industry and most other industries.

2. The plan is clear. It provides for Federal hydro plants, Federal steam plants, Federal transmission lines to all load centers, Federal control of all sales and rates. It is not regional. It will cover the entire nation and those who live in states not now involved had better do everything possible to help their buddies in the front-line trenches and to build their own defenses.

My best judgment is that this program will never be consummated, that the Federal policy will change. Although the foes of private electric companies are so formidable that they could destroy the industry, intelligent activities by the industry can assure a long and successful future. Likewise, no activity, or limited activity, or unintelligent activity by the industry will lead to the eventual destruction of our companies by a tortuous process akin to a Russian trial and prison.

Let me try to support this theory. Repeatedly we hear that a project is too large for private industry, so the government has to build it. That's just pure *baloney!*

TVA has spent about $540,000,000 on straight power facilities in the 18 years it has been operating, since 1933. Compare this with the following record of construction by private companies—a record that has been achieved in the six years since the close of World War II:

$816,000,000 by Pacific Gas and Electric Co.
$445,000,000 by Consolidated Edison Co. of New York
$344,000,000 by Southern California Edison Co.
$246,000,000 by The Detroit Edison Co.

Between 1946 and 1952, the United States Steel Co. spend almost one billion, four hundred million dollars on its expansion program.

From 1946 to 1951, inclusive, the electric industry spent ten billion, 89 million dollars to construct new facilities, while in the same period the Federal government spent only about two billion, 428 million dollars on power projects—or only about one-quarter the amount financed by private enterprise.

This certainly indicates to me that the only thing our industry can't build is a project which is not economically feasible, not financially sound and which shouldn't be built at all, or which should be built for some valid nonreimbursable reason such as reclamation or flood control.

"Cheap Power"

The war cry of the Federal power proponents is "cheap power." It has been effective against and harmful to us. Now let's analyze it.

Whether the power is Federal power or private power, the people pay for it and every cent of it. They pay for it as consumers or as taxpayers, or both.

Consider the Hungry Horse project in Montana. Fig. 6, the "Cheap Power" Myth in the Northwest, shows that Montana Power Co.'s Kerr Dam cost $11,000,000 for 112,000 kilowatts of capacity. Hungry Horse, on the same watershed and only 50 miles away is estimated to cost $110,000,000 for 285,000 kilowatts—10 times the money for two and one-half times as much capacity. Which is "cheap" power? Electric companies should do much more than they are doing to tell the people.

Without dwelling on additional examples, let me suggest that a comparison be made between the number of employees per customer which each Federal agency operating in a territory has with the number of employees per customer in a private electric company.

Also compare the cost per kilowatt of any project being built in a territory by the Federal government with the cost per kilowatt of the same type of project being built by private companies.

The socialized power program of the Federal government lacks a firm foundation of integrity and economics. All the facts are on the side of the electric companies—I do not believe that they are taking full advantage of their favorable position. Whenever they do, they are surprisingly successful.

The electric companies have been successful where they have opposed before Congress or the courts Federal hydroelectric projects which the companies were willing to build themselves—for example, Kings River in California and Roanoke Rapids in North Carolina.

The electric companies have been reasonably successful in opposing Federal transmission lines where they now have or are willing to build adequate lines themselves.

The five New York companies are making headway in preventing a Federal power development at Niagara by being willing and able to do the job themselves and by labeling the Federal proposal for what it is—an adventure in socialism. New England is taking steps to forestall a Federal power invasion of its area by preparing to make worthwhile developments itself. Electric Energy Inc. successfully competed with TVA for a big share of a government defense load, and Virginia Electric & Power Co. is winning the Roanoke case against the Department of the Interior.

Electric companies are beginning to

organize as an industry and talk, act, think, and fight as a unit. They could well do much more than they are.

The real problem is much broader than an electric industry problem. If the utility problems could be isolated, the difficulties would be reduced to a fraction of their present importance.

As I see it, our entire nation is on a direct road to a lower standard of living, to fewer comforts in life, to reduced freedom, to something comparable to what England has today, unless the people demand a complete change in administrative thinking in Washington.

Wasteful, extravagant government necessarily means higher taxes, more inflation, more regulation by government, less actual value for the dollar, and that the American people will be able to buy less with what they receive for each hour they work.

For several years I have believed that the steel business, the banking business, the railroads, or the medical fraternity would be nationalized before the electric industry. However, the order is not important, because if the nation adopts that policy all business will receive similar treatment.

To Assure Success . . .

If it is not too presumptuous, I would suggest the following program as one which should assure the continued success of the electric industry:

1. Maintain at all times adequate facilities—generation, transmission and distribution — to supply the power requirements in each area.
2. Efficient and courteous service to all members of the public, and at lowest possible cost.
3. A capable Information Department which keeps employees and the public informed on all problems relating to the electric industry and our form of government. Wasteful Federal spending, high taxes, the seizure of the steel industry, socialized medicine, are just as important as problems relating specifically to the electric industry. It is all in the same mulligan and all will be cooked together unless the fire is put out.
4. A willingness and readiness when economically feasible to build power projects on the streams of the nation, for example, Idaho Power Co. at Hells Canyon and the power companies that are willing to develop the Niagara sites.
5. A willingness and readiness to build generating facilities and all other power facilities at Federal dams, whenever it is not economically feasible to also build the dam.
6. A willingness and readiness to build all necessary transmission lines.
7. An essential part of the last three points is an aggressive, active, forceful opposition to the government doing any of the things a private electric company is willing to do.
8. Last—and this is very important —organization of the electric companies into a united front. The industry story must be presented to the public adequately and correctly, and electric companies must think, act and speak as a team.

I hope that I have stressed four principal thoughts:

1. If the present administration can and does carry out its power program through future years, the electric industry is doomed and its personal future and the future of the people of America are dark and dreary.
2. Our fighting forces are far stronger than the opposition and if each electric company in these United States adopts and executes a sound, intelligent program, its future and the future of the American people are bright.
3. The future of the industry is so intermingled with the future of good government in these United States, with the future of all private ownership of property, with the future of personal freedoms and with the future of the people as a whole that it cannot be separated.
4. And last — that there is ahead one of the most important, most worthwhile challenges ever confronting any industry and any nation, with a continuing land of plenty promised, if the electric industry does its job as it should.

The Complexities of a National Water Policy

(*Continued from page* 250)

tine—Armourdale—Central Industrial District areas." It is difficult to reconcile this conclusion with the emotional pronouncements of public officials, high and low, who placed the responsibility for the damages from this catastrophe on the failure of Congress to appropriate monies in 1949 and 1950. How many of them know better?

The 1952 floods on the upper Missouri basin may result also in further modification of the project plan. Meteorological events must be recognized, but it is disturbing to know that such major adjustments in programming are being made in the midst of rapid execution of projects. No one at the moment is prepared to state what the ultimate cost of this vast undertaking will be. No one is prepared to state which of the many competitive methods proposed will actually be developed for operating control. The battle between upstream and downstream activities is at high peak. Should billions of dollars be spent while many of these tremendously important technical, legal, and administrative issues are still quite unresolved? Is the impatience demonstrated by our great political leaders a sound guide for action? If they cannot be made aware of the acute problems which plague us, not only in the Missouri River basin but elsewhere, cannot the citizen at least be let in on the issues?

The record so far for persuading either Congress or the average citizen of the problems involved and of some of the contemplated solutions is remarkably dismal in accomplishment. Many of us feel, however, that as long as there is any hope of developing policies which would be less wasteful, more uniform in character, more skillfully and technically diagnosed, the battles should continue. This battle is wholly unrelated to philosophical concepts or to political party. Both political parties have been distinguished by their careful avoidance of corrective legislative measures. Both have been unanimous, or nearly so, in promoting ill-considered projects. Placing the blame on Federal agencies is neither realistic nor accurate. They can do a good job if permitted to do so!

PERSONALS

R. FRANK BROWER and OTTO W. MANZ, JR., Consolidated Edison Co. of New York, Inc., have been named Assistant Vice Presidents of the company.

A graduate of Duke University, Mr. Brower joined The New York Edison Co., a predecessor of Consolidated Edison, in 1920, after studying electrical engineering at Columbia University. Starting as a tester, he progressed to executive assistant in the office of R. H. Tapscott, then vice president and now chairman of the board, in 1933 and to system engineer in 1940. Last year he served with the Defense Electric Power Administration and continues to act as a DEPA consultant.

Mr. Manz, a graduate of the University of Pennsylvania, has been associated with the company since 1925 when he joined Brooklyn Edison as an engineering assistant. In 1943 he was loaned to the Carbide and Carbon Chemicals Corp., then building a generating plant at Oak Ridge in conjunction with atomic-bomb production, and was in charge of both the plant and the electric distribution system. He returned to Consolidated Edison in 1946 and was named manager of system operation in 1950.

ROBERT BRANDT has been named Assistant Vice President of the New England Power Co. A graduate of Harvard University and Harvard Engineering School, Mr. Brandt was associated with the General Electric Co. before joining New England Power in 1926 as an engineering assistant. In 1935 he became assistant engineer for the New England Service Co. and transferred in the same capacity to New England Power in 1941, becoming engineer during the next year. In 1951, Mr. Brandt served as director of the Power Supply Division of DEPA.

WILLIAM T. RICHARDS, Indianapolis Power & Light Co., has been named to the new position of Commercial Manager, following the retirement of A. C. CRANDALL, Vice President in Charge of Sales, with whom Mr. Richards has been associated for the last 15 years.

Mr. Richards has been engaged in sales work with Ipalco since his graduation from Purdue University in electrical engineering in 1926. Starting as a power sales engineer, he became director of power sales in 1941 and assistant sales manager in 1946. A member of the EEI Competitive Service Committee, he is also active in committee work of Indiana Electric Association, American Society of Metals, and is a director of the Great Lakes Power Club.

Mr. Crandall, who was first identified with Indianapolis electric sales in 1923, worked with utility sales organizations in the South before returning to Indianapolis as commercial manager for Ipalco in 1937. Three years later he was made vice president in charge of sales and is now being retained by the company as a part-time consultant. Mr. Crandall is a member of the EEI Commercial Division General Committee.

CONVENTIONS AND MEETINGS

1952

JULY

10 EEI Industrial Relations Committee, EEI Headquarters, New York, N. Y.

AUGUST

19-22 AIEE Pacific General Meeting, Phoenix, Ariz.

SEPTEMBER

3-13 American Society of Civil Engineers, Centennial Celebration, Chicago, Ill.

5-6 Maryland Utilities Association, Cavalier Hotel, Virginia Beach, Va.

7-10 Rocky Mountain Electrical League Fall Convention, Colorado Hotel, Glenwood Springs, Colo.

8-9 EEI Market Development and Electrical Applications Committee, EEI Headquarters, New York, N. Y.

8-10 Area Development Institute, Yale University, New Haven, Conn.

8-11 ASME Fall Meeting, Sheraton Hotel, Chicago, Ill.

8-12 Illuminating Engineering Society National Technical Conference, Edgewater Beach Hotel, Chicago, Ill.

10 EEI Commercial Sales Section Chairmen, EEI Headquarters, New York, N. Y.

11-12 EEI Commercial Cooking Committee, EEI Headquarters, New York, N. Y.

15-16 EEI Accident Prevention Committee, Sheraton Hotel, Rochester, N. Y.

15-16 EEI Accounting Division Organization Meeting, General Activities Group, Netherlands Plaza Hotel, Cincinnati, Ohio.

17-18 EEI Accounting Division Organization Meeting, Customer Activities Group, Netherlands Plaza Hotel, Cincinnati, Ohio.

1952

SEPTEMBER

18-19 PIP Annual Workshop Conference, Edgewater Beach Hotel, Chicago, Ill.

19-20 Public Utilities Association of the Virginias, Greenbrier Hotel, White Sulphur Springs, West Va.

OCTOBER

1-3 Wisconsin Utilities Association Convention of Technical and Sales Sections, Schroeder Hotel, Milwaukee, Wis.

5-8 Controllers Institute of America, Annual Meeting, Hotels Sheraton, Cadillac and Statler, Detroit, Mich.

6-7 EEI Prime Movers Committee, Roosevelt Hotel, New Orleans, La.

6-8 EEI-AEIC Joint Meeting, Meter and Service Committees, Mayflower Hotel, Washington, D. C.

13-14 EEI Electrical Equipment Committee, Roosevelt Hotel, New York, N. Y.

13-17 AIEE Fall General Meeting, New Orleans, La.

23-24 EEI Transmission and Distribution Committee, Hotel Adolphus, Dallas, Tex.

27-30 AGA Annual Convention, Atlantic City, N. J.

30-31 EEI-AGA Taxation Committee, Closed Meeting, Chalfonte Haddon Hall, Atlantic City, N. J.

NOVEMBER

10-13 NEMA Annual Meeting, Haddon Hall Hotel, Atlantic City, N. J.

10-13 NARUC Annual Meeting, Hotel Marion, Little Rock, Ark.

17-19 EEI Industrial Relations Committee, Annual Fall Round Table Conference, Sheraton Hotel, St. Louis, Mo.

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